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"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta. It will languish, if such communications shall be long intermitted; and it will die away, if they shall entirely cease." SIR WM. JONES.

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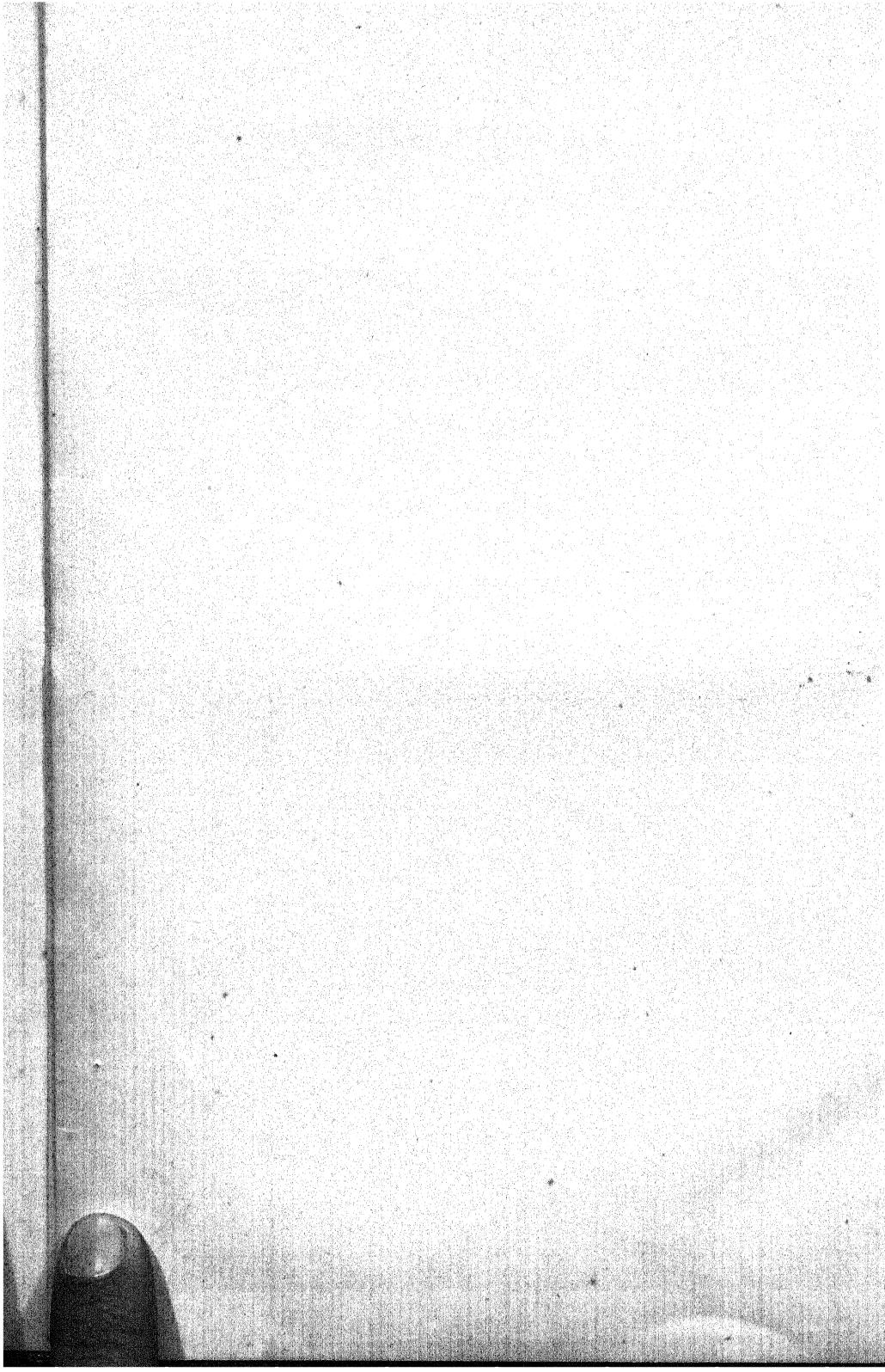
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OF THE

ASIATIC SOCIETY OF BENGAL.

VOL. LXII, Part III.—ANTHROPOLOGY AND COGNATE SUBJECTS.

No. I.—1893.

The Hindus of Eastern Bengal.—From the papers of the late DR. JAMES WISE. *Edited by the Anthropological Secretary.*

The Hindus of Bengal claim to be pure Aryans, but the Hindus of Upper India repudiate any relationship with them. The Aryan immigration extended gradually throughout Bengal, and the tie which bound the settlers to their faith and peculiar usages was relaxed by residence among aliens. The example of races untrammelled by caste or religious scruples also led them to shake off all bonds and assert greater freedom of action. The priesthood formed illegal connections and neglected their religious duties, while the mixed offspring observed none of the Bráhmanical ordinances. In the tenth century corruption and irreligion being universal, Ádisúra introduced priests, trained in the orthodox school of Kanauj, to reform and educate the people. But the arrival of a small body of religious teachers did little towards elevating the Bráhmans, or laity, and in the twelfth century Ballál Sen found only nineteen families of the Ráṛhí Bráhmans living in strict obedience to all that their religion demanded These families were raised to the highest rank, but those who had forfeited all respect and formed illegal marriages were reduced to secondary, or even lower grades. The innovations made by this monarch only affected the Ráṛhí and Varendra

Ṣreṇi, or orders, for the Vaidika and Bhaṭ, refusing to be classified by a Vaidyá, retired into the hill countries of Sylhet and Orissa; and the other tribes, who had become hopelessly demoralised, were left untouched.

The chief object of the reform organised by Ballál Sen was the creation of an aristocratic and powerful hierarchy, placed in such a position of dignity, that no misdemeanour and no immortality could deprive it of hereditary privileges, or the reverence of the lower classes. An illegal marriage was the only transgression entailing loss of rank and forfeiture of respect. No provision was made in this new code for the elevation of the lower ranks when families became extinct; consequently, as Kulín houses disappeared, the difficulty of procuring husbands for daughters vastly increased, and when the third recognisation of the order was made by Devi Vara, in the fourteenth century, polygamy and the buying and selling of wives was the engrossing occupation of the twice-born Bráhmans.

In spite of these successive endeavours for securing the purity of the Bengali Bráhmans, it is remarkable that Kanaujiya, and other Bráhmanical tribes of Hindustan, have always despised and repudiated any connection with their Bengali brethren. In their religious and domestic ceremonies, habits of life, and mode of living, Bengali Bráhmans are quite distinct from any of the other tribes, and the only point of attachment between them is when outcast Kanaujiyas marry Ṣrotriyá maidens and become absorbed into their ranks. Although clinging with characteristic pertinacity to all the prerogatives of their order, modern ideas are gradually undermining their bulwarks, and the exclusive rules are step by step yielding to education and the progress of the nation. Kulín Bráhmans are now found adorning the bench, the bar, and the medical profession, and, while proving useful members of society, exert a rare influence for good over their Hindu countrymen.

Besides the Ráṛhí and Varendra tribes, there were in Bengal four inferior classes of Bráhmans left out of the organisation of Ballál Sen, namely, the Vaidika, Sapta-ṣati, Áchárya, and Agradána. The three first claim to have been resident in Bengal before the reign of that monarch, and the services of all the four are still required by the Ráṛhi Ṣreṇi at many important ceremonies. The Vaidika is the only division that has preserved an honourable position; but whether this is owing to their being descendants of Kanaujiya Bráhmáns, to the respectability and decency of their lives, or to their independence of character, is very doubtful. They decline to give their daughters in marriage to the Kulín Bráhmans of Bikarampúr, and refuse to act for any clean Ṣúdra, or Bráhman, unless his family can trace their origin to Kanauj. The

Sapta-śati, undoubtedly one of the oldest Bengali septs, is gradually being absorbed by the Śrotriyá, and few confess they belong to it. In a few years they will be sought for in vain. The Áchárya and Agradána are Bráhmans only in name. The former are chiefly employed in secular occupations, and in discharging duties useful, but unknown, to the Vedas or Puráṇas. The Agradána, claiming to rank above Áchárya, is the most despised of the sacred order, and clean Śúdras, as well as Patit Bráhmans, would be degraded by eating with them.

The Patit Bráhmans are the most active representatives of the Hindu hierarchy, having fallen from their high estate by neglecting religious duties, officiating in Śúdra temples, marrying into inferior grades, or acting as Purohits to the Varṇa Śankara.[1] The loss of rank has in some respects been mitigated by the affection and devotion of the laity, and by the high social position given by the caste for which they officiate. It is to this class, abandoned by the Kulíns, that India owes the spread of the Hindu religion among the wild tribes of the Taráí, Assam, and Eastern Bengal, and the conversion of the semi-Hinduised aborigines throughout Bengal. Bad and immoral many of these Śúdra Bráhmans are, but as a class their lives are not one long course of depravity and selfish indulgence, as is too often the case with the Kulíns. Education has made no progress among them, and holding the position they do, concession to the wants of the age is not to be expected. Their hold over the men is slowly loosening, but the women still obey and worship them, and while this subjection lasts, Hindu caste and Hindu exclusiveness will remain.

Though not recognised in books, many social grades are found among these fallen Bráhmans. Those ministering to the Nava-śákha,[2] popularly called Śúdra Bráhmans, occupy a position of comparative distinction; but at the bottom of the scale Bráhmans appear, who are accounted lower than the vile caste they serve; while such an individual as the Chaṇḍal, or Ḍôm Bráhman scarcely deserves to be called by that proud title.

The Vaiśya caste, standing next the sacred order, occupies a very anomalous and strange position. Their claim to be genuine Vaiśyas is admitted by the higher classes, but the Ballálí Vaidya and Káyath refuse to touch food prepared by them. This small caste deny that Ballál Sen reorganised or interfered in any way with their regulations, and for this reason it remains isolated and unrecognised by Hindus.

The two next castes are the Vaidya and Káyath, who repudiate the name of Śúdra, and maintain that Ballál Sen did not enroll them

[1] Literally, mixture of colours: hence mixture of castes.

[2] Or Nava-Śayáka, the nine inferior castes.

among the "Nava-Ṣákha." Both are satisfied to rest their title of superiority on the fabulous births of their reputed ancestors. Ballál Sen belonged to the Vaidya caste, and it is to his partiality that it secured pre-eminence. On one section the Bráhmanical cord was bestowed, although the caste profession was a dishonourable one, and Ghaṭaks were engaged to preserve the family purity. There has always existed much latent jealousy between the Vaidya and Káyath, but the latter acknowledge some inferiority, although the cause of this difference is never defined.

The Káyath is undoubtedly one of the oldest tribes in Bengal, but it is unnecessary to believe all that is said of Ádisúra and the five servants of the five Kanaujiya Bráhmans. One branch, the Bangaja,[1] has been settled for many generations at Edilpúr, along with the caste Ghaṭaks, and Kulín Káyath families are as punctilious and as vain of their birth as any Gánguli, or Mukharji, although the Lálás of Mathurá and Agra laugh at such pretensions, and will not recognise them as Káyaths at all.

The Kevala, or pure Ṣúdra, does not exist in Bengal. All castes below the Bráhman belong to the "Varṇa Ṣankara," being the offspring of parents of different tribes.

The recognised authorities on castes are the Institutes of Manu, the Játi Nirṇaya chapter of the Brahma-Vaivartta Puráṇa,[2] and the Játimálá. According to the Bráhmans it was the wickedness of Veṇa, the Rájarshi, who ordered that no worship should be performed, no oblations offered, and no gifts bestowed on Bráhmans, and caused the people to disobey the laws and intermarry with prohibited classes. Until his era Bráhmans only married Bráhmans, Ṣúdras, women of their own rank, and Chaṇḍáls followed their own tribal customs. It was natural for the priests to attribute the irreligious propensities of the people to a cause like this; but there is no doubt that laws prescribed by the Bráhmans for maintaining the purity of their order must have been soon violated by those in whose favour they were enacted. Although marriages between individuals of different tribes gave origin to the Varṇa-Ṣankara, or mixed castes, the Puráṇas give other explanations. According to the Bráhma-Vaivartta Puráṇa, the gardener, blacksmith, shell-cutter, weaver, potter, and brazier are descended from the offspring of Viṣvakarma, the celestial architect, and Ghṛitáchi, an Apsara, or nymph of heaven, and hence it is that all Kárus, or artisans, worship their progenitor with exceptional reverence. The reasons, again, why certain

[1] Banga, or Vanga-ja, Bengali born.

[2] A synopsis of this is given in the *Calcutta Review*, vol. xv, p. 60.

castes are degraded are often quite ludicrous, but this does not cause their rejection. The Sútradhára lost rank for refusing to supply the Bráhman with sacrificial wood; the Chitrakára for painting execrably; and the Suvarṇakára for stealing gold given him to mould an idol. The modern Súnṛí moreover, does not resent being told that his ancestor was created from the chips of the mutilated trunk of Ganeśa, nor the Kumár that Śiv transformed a waterpot into the first potter.

According to the classification of Ballál Sen, as interpreted in Eastern Bengal, the nine following castes are considered pure, and the so-called Śúdra Bráhman officiates for all:—

Śánkhárí.	Kumár.	Gop-Goála.
Tántí.	Málákár.	Madhu Nápit.
Kámar.	Nápit.	Baaáí

Judging, however, by traditions still surviving, the position of a caste in the new roll depended chiefly on its usefulness and importance to the community at large. The profession which had proved itself essential to the comfort or welfare of the Hindu hierarchy was at once promoted to a higher level, while the less important was reduced. Thus, the Tántí, unclean in Bihár, became clean in Dacca, and the indispensable barber was raised to the same social level as the Káyasth. The relative position of the various castes is still a burning question in Bengal, and in large villages where any caste predominates, its claims to superior rank are usually conceded. For instance, the Gandha-banik, Telí, Támbúlí, and Kánsárí often assert, to good purpose, the right of being enrolled among the nine, and if their voice be sufficiently loud and influential it will be heard.

The Nava-Śákha have five servants, or Pancha-vartta, attached to them in common, who possess the prescriptive right of attending at all caste and family celebrations. The five servants are the Bráhman, Málákár, Dhobá, Nápit, and Naṭa, or musician, who are presumed to be exclusively engaged in the service of the Śúdras, but they also earn money by waiting on lower castes. Even now-a-days some work for the Súrya-vañsi, who ten years ago were not Hindus in name, while others readily work for the Báotí, Kapálí Kawálí, Paráśara Dás, and other tribes of doubtful origin. Where the fisher castes are numerous and cannot be overlooked, no difficulty is found in engaging their services. They work indeed for all castes employing a Patit Bráhman, but the utterly vile tribes, the Bhúinmalí, Chamár, Paṭní, and Súnṛí, having Bráhmans of their own, are not served by the Pancha-vartta. To this general rule, however, there are exceptions. The worshipful barber, for instance, condescends to shave, but will not pare the nails of the Sáha rice merchant.

Although caste is no longer revered as an old institution sanctified by religion and immemorial usage, and is disappearing before the assaults of modern civilisation, a tendency to the formation of new castes still exists. Semi-Hinduised races are being enrolled among Hindus and old established castes are being split up by adopting new occupations. But if this new occupation be not dishonouring, the Purohit continues his ministration. For instance, the great Chandal tribe has given off eight branches, yet the Chaṇḍal Bráhmans officiate for all. On the other hand, the agriculture Kaibarttas, having taken to a base employment, are obliged to support a Purohit of their own.

Between the Ṣúdras and the Nicha, or vile castes, many tribes, organised by degraded Bráhmans, or united by the exigencies of modern civilisation, are found occupying an uncertain position, exposed to the sneers of the exclusive and conservative Ṣúdras.

These intermediate castes are—

Báoti.	Kándho.	Lohait Korí.
Baqqál.	Kapálí.	Nar.
Bháṭ.	Karní.	Parásara Dás.
Beṛua.	Karrál.	Páṭial.
Halwah Dás.	Kawálí.	Sutár.

In the Tantras,[1] the epithet Antya-ja, or inferior, is applied to the following seven tribes:—washerman, currier, mimic (Naṭa), fisherman, "Meda," or attendant on women, cane-splitter (Varuda), and mountaineer (Bhilla). The term Antyávasáyin, or dwellers outside the town, was given to the Dôm, Pan, Háṛí, and other sweeper castes.

We, however, possess a very correct list[2] of the outcaste tribes in Bengal in the roll of pilgrims excluded from the temple of Jagannáth. If prohibited castes are distinguished from professions there are only eleven castes so utterly disreputable that they dare not enter the sanctuary. These are the—

Súṇṛí.	Kahár.	Tíyar.
Nama-Ṣúdra.	Ráj-Vaṇsi.	Bhúinmálí.
Dhobá.	Chamár.	Háṛí.
Jogí.	Ḍôm.	

Much information regarding caste, as understood in Bengal, is obtained by comparing the relative position of Hindustánís who reside, or temporarily sojourn there, with that of castes native to the province.

Permanent residence is always attended by social expulsion, but a stay of a few years is with some castes a disqualification, with others it

[1] Colebrooke's *Essays*, ii, 164.

[2] Harington's *Analysis*, iii, 213; Hunter's *Orissa*, i, 136.

is not so. For example, the Ahír, Surahiyá, and Kanaujiya Bráhmans, who keep up communication with their kindred and marry from their own homes, are reckoned pure; but the Kahár, Ahír, and Kándú domiciled in Bengal forfeit all claim to be considered stainless. By adopting local Śúdra customs and marrying with women of the country Hindustání tribes are stigmatized as "Khonṭá," or debased. The Kanaujiya Bráhman, again, expelled by his family for these delinquencies, finds shelter in the ranks of the Srotriyá; but above this he cannot expect to rise, and his children must be content with a very ambiguous position.

The steps by which a Hindustání caste loses its original rank and gains a new one may be traced in the case of the potters. The Kumhár of Bihár is always unclean in Bengal, but if he marries a kinswoman he may return to his home without loss of rank. The Ráj-Mahállia potters however, being in an intermediate state, have neither risen to an equality with the Bengali Kumár, nor remained unclean like the Kumhár. The Śúdras of Bengal drink from their water-vessels, and, still more blessed, the Súdra Bráhman ministers unto them. Lastly, the Bengali Kumár, originally of the same stock, has become in the course of ages a pure Śúdra and one of the Nava-Śákha.

In no instance, however, is the separation between kindred castes so striking as with the Chamárs and Rishís. Both belong to the same tribe, both are equally vile in the eyes of Hindus, and both live apart from all other castes, yet similar occupations not only excite jealousy and enmity, but prevent all friendly intercourse between them.

Occupations, moreover, which a Hindustání may engage in at home without stain or obloquy, are sometimes unbecoming when the habitation is in Bengal. Thus the Dômni and Chamáín, professional musicians in Upper India, are disgraced by playing for hire in Bengal, while on the other hand, such menial work as the Mungírya Tántís perform in Dacca would be considered very debasing in their own district.

Although continuous residence at a distance usually repels, a brief sojourn sometimes draws together, disunited sub-divisions. Thus the different branches of Ahìrs and Chhatrìs intermarry in Bengal and lose caste, although debarred from doing so in Hindustán.

The Bráhmanical order to which the Purohit belongs is generally a nice test of the rank accorded to a Hindustánì caste. Among the lower tribes the Guru belongs either to one of the Daṣnámi orders, or he is a Vaishnava Bhagat, who visits his flock at regular intervals, confirming the old, and teaching the young the rudiments of their faith. Maithila Bráhmans, on the other hand, ordinarily act as Purohits to Kurmì, Chhatrì, Kándú, Ahìr, Cháín, and Kewaṭ; but Chhatrìs are occasionally found with a Sarsut, or Sarasvatì, Bráhman, and Kurmís

and Dosádhs with a Sákadvípa. The Kanaujiya tribe again ministers to Binds, Tántís, and Gádariyás. In the case of the Ranḍa Khatrís, whose parentage is equivocal, the strange phase is found of a Kanaujiya acting as Purohit, a Ṣrotriya of Bengal as Guru.

A most important distinction between Hindustání and Bengali castes of similar origin, is the religious belief found among them. It may be said with perfect truth that Vaishnavism, in one or other of its diverse forms, to the exclusion of Ṣaivaism and all other creeds, is the faith professed by the agricultural, artizan, and fisher tribes of Bengal. The worship of Kṛishna has for obvious reasons attracted well nigh all the Goála and other pastoral tribes of India. The teaching of Chaitanya and his successors has made little progress among Hindustání castes, but the sympathetic creeds of Kabír and Nának Sháh have attracted multitudes of disciples. The Kurmís and Dosádhs especially patronise Kabír; the Kewaṭs, Kumhárs, and many Dosádhs enroll themselves under the banner of Nának.

It is among castes from Northern Bengal, such as the Kándú Bind, Muriárí, and Surahiyá, that the followers of the strange Pánch-Píriya creed are to be met with. Other curious sects, unknown to Bengal, are also found in their ranks. The Tirhutiyá Tántìs are members of the Buddh Rám communion. Kurmìs often profess the doctrines taught by Darya Dás, and many Dosádhs those of Tulasí Dás. Still more worthy of notice is the existence among them of an old prehistoric cultus. The apotheosis of robber chiefs by Dosádhs, the deification of evil spirits, as Rahu by the Dosádhs, Kasi Baba by the Binds, and Madhu Kunwár by Tántís, and the animistic idea, endowing with life and personality the destructive energy of the Ganges, are all forms of belief unknown to castes native to Bengal.

The Marriage Customs of Tibet.—*By* Sarat Chandra Das, C.I.E.

PART I.

The Ancient Marriage Customs of Tibet,

(As now prevailing in Purang, Nah-ri, and the country round Lake Manasarovara.)

Marriage by capture, as it now, to some extent, prevails in Purang and the country round Lake Manasarovara, existed in former times in Tibet and in the Cis-Himalayan countries. In U and Tsang comparatively few remnants of this ancient custom now remain, though in Sikkim, Bhutan, and the Himalayan district of Spiti, near Kulu, a

survival of it may be traced in the part played by the *kún-chan* (thief) in marriage ceremonies.*

In Purang when a young man wishes to marry a girl, he watches her movements, and carefully ascertains the places where she frequently goes for agricultural or pastoral work. When he finds a good opportunity, he comes, accompanied by one or two of his friends, and tracks her to the field, or to the pasture where she happens to go, and finding her alone carries her by force to his house. He keeps her confined in a separate house so as to have abundant opportunity of soliciting her favours. He provides her with good food and nice clothes and remains near her to coax her and to win her love. When he goes out of the house he leaves some one of his trusted friends to guard her against seductions of other men and the attempts of her parents to take her away. Sometimes her parents come in search of her, or send men to fetch her home. If the girl be unwilling to live with her captor, or if her parents do not permit her to marry him, the matter is settled by the village elders or the tribunal of the *Jong-pon* (district chief). If they permit the union, an auspicious day is fixed for the marriage when a good deal of *chang* (wine) is consumed. The entertainment on the marriage occasion is therefore called *chang-thûng* (drinking of wine).

Marriage by elopement.—When a girl has given her heart to a young man, but her parents will not let her marry him, she elopes with him. He is helped in the elopement by two or three sturdy friends, who accompany him to prevent a rescue on the part of the parents and to see the couple safely through. Having brought her to his home he accommodates her in a good house engaged for the purpose. Here he conceals her and enjoys the honey-moon, by taking care to employ a number of strong men to guard his bride from being carried away by other men or

* Spiti. *Polyandry*,—Marriage customs.—In Spiti polyandry is not recognised, as only the elder brother marries, and the younger ones become monks. But there is not the least aversion to the idea of two brothers cohabiting with the same woman, and, I believe, it often happens in an unrecognised way, particularly among the landless classes who send no sons into the monasteries. I heard in Spiti, that when the bridegroom's party goes to bring the bride from her father's house, they are met by a party of the bride's friends and relations who stop the path: hereupon a sham fight of a very rough description ensues, in which the bridegroom and his friends, before they are allowed to pass, are well drubbed with good thick switches.

In Spiti there is a regular ceremony of divorce which is sometimes used when both parties consent. Husband and wife hold the ends of a thread, repeating meanwhile:—"One father and mother gave, another father and mother took away: as it was not our fate to agree, we separate with mutual good-will." The thread is then severed by applying a light to the middle. After a divorce a woman is at liberty to marry whom she pleases. (*Crooke's Notes and Queries, &c.*)

by the friends of her parents. In the meantime his friends, or father, or relations go as *lóng-mi* (begging men) to the house of the girl's father. They take with them some presents for him, and also provisions for their own use during the time they remain there. They do not venture to go near the house of the bride's parents, but remaining at a distance of about a hundred yards or more from it, swing a *khatag* (salutation scarf) to say that they have come to humbly propose the auspicious marriage of their daughter. At first the parents and their friends take no notice of this and decline to look at them. The *lóng-mi* continue their silent entreaties for three or four days, and do not leave the place until by their importunity they have moved the hearts of the bride's parents. The father of the girl then brings them before the elders of the village, and asks the latter to inflict on them the punishment they deserve for having stolen his daughter.

If the *lóng-mi* abide by their decision and pay the fine immediately, the marriage proposal is formally received by the bride's parents. In the meantime the bride returns to her father's house. Then an auspicious day is fixed for the wedding entertainment which is called *chang-thûng*, when the friends and relatives of the bridegroom come to fetch the bride to the bridegroom's place. The bridegroom being conscious of his guilt dare not visit the house of the bride's father, till a long time after the completion of the marriage. If he indiscreetly happens to go there he is given the appellation of *kún-chan* (thief), and dealt with accordingly.

Among the upper classes in Purang parents generally arrange for the marriage of their sons and daughters. First of all comes the betrothal.* When the parties betrothed reach the proper age, *i. e.*, about two or three years after attaining to puberty, they are married. The bridal party,

* Among Ladákis, betrothals, which are the occasion for a little drinking of tea and *chang*, are arranged by parents in consultation with relatives. Having fixed upon a match, which, from a worldly point of view, seems desirable, they then refer to the *Lámás*, to see if the destinies of the proposed couple suit. If they are found to be unsuited the betrothal is given up. A youth is betrothed when he is about 20 years of age, and a girl perhaps two years earlier. After the betrothal or "*tea chang stär ches*," the wedding, or "*Pagston*" may take place within a month, or it may be put off for a year or more. If a male child possessing property, is left alone in the world, he is betrothed at once to some fully grown woman, who acts as his nurse during his childhood, and as his wife during his later years. This is not found an inconvenient practice, as a Tibetan may have two "little wives" in addition to his original "*Pagston*" wife. The dowry (*kinto*) is fixed at the time of betrothal, but it is not given till the marriage takes place, and some times even after that. This dowry is paid by the bridegroom to the father, or other near relative of the bride.—"*Captain Ramsay's Western Tibetan Dictionary*," p. 10.

which consists of the kinsmen and relations of the bridegroom, carrying with them presents of clothes for the bride, and provisions for the marriage entertainment, proceed on an auspicious day to fetch the bride from the house of her father. The friends of the bride erect nine stone cairns called *tho-do* in the way, each about a hundred yards apart from the other. The bridegroom's party wait at the ninth *tho-do* which is farthest from the house of the bride's father, and in the hearing of the bride's friends, who come to meet them there, describe the personal beauty and accomplishments of the bride and the bridegroom, and also pointing to the *tho-do* say that it is the first barrier that the demons have set up and that it bars their way like a mountain. If they depart from the customary description of the gods and the demons, or commit any mistake in the manner of describing the *tho-do*, the friends of the bride become angry and break down the mound. Then the bridegroom's party must apologise and again describe the mound and the couple to be united. In this manner they halt at every one of the *tho-do* and describe them according to the custom of the country. At the last *tho-do* which is consecrated to the gods, they sing the praise of the bride, her parents and their tutelary deity, and say that as they have come thus far after having surmounted the nine valleys and nine mountains (*la-gu* and *lûng-gu*) they hope that the gods will help them in their mission.

At the house of the bride's father they are received with kindness and entertained with tea, *chang*, barley flour and the three kinds of meat, cooked, dry and raw. They present a milch yak with her calf to the bride's mother as the price of the bride, called *nu-rin* (price of the mother's milk), and also two milch yaks to the father as the *ñah-rin* (price for (his) back). They also make presents of money and scarves to the relations of the bride's parents, and return to the bridegroom's house with the bride and her dowry, &c.

Preliminaries of Marriage in U, Tsang and Sikkim.

Parents generally arrange for the marriage of their sons and daughters, when they have passed the age of puberty. At the outset of a marriage proposal, it is necessary for the parties to be furnished with the names of the years in which they and their respective parents were born. This is considered essential for the purpose of ascertaining the *thun-tsi* calculation of the harmonious conditions of marriage in the parties to be united. For this object two or three astrologers are employed to arrive at independent results, working on different astrological data.

The application to astrologers for calculation is generally accompanied by some presents, consisting of *sum-tshan* (articles of three varieties), a

tray full of rice, a quantity of barley flour and a few bottles of wine. Receiving these presents the astrologer spreads his astrological chart, called *tsi-thang*, on a little table, and places in front of it a jug full of wine to offer *serkem* (libation of golden drink) to the gods, a miniature flag called the *dah-dar* (a silken flag of five colours attached to the sharp end of an arrow), and burning incense. He then puts a few white and black balls, of the size of a pea, on the chart, and throws them on it in the manner of dice to ascertain the good and bad luck of the parties to be married. After noting down the years of birth of the parties he gravely sits on a cushion to perform the ceremony of *den-dar* (the Test of Truth) of his calculations, and makes the following invocations:—"I pay homage to Buddha—his Law, and the Church, and vow to be under their protection, till I shall have entered the state of supreme enlightenment. By the moral merits of my good deeds, such as charity, forbearance, &c., let all the living beings of the world be benefited, and thereby let me attain to Buddhahood. Let all the animate beings of the world come under the influence of TRUTH, and the causes of TRUTH, and also be free from misery, and the causes of misery. Let them also not be devoid of TRUTH, which is free from misery, and abide in that even state of mind, which is free from corruption, partiality and passions. Let me gain perfection as quickly as possible, that I may work in the cause of all living beings of the world. It is with a view to serve them in respect of the sciences of astrology and divination, that I now undertake to perform this religious service." With this introduction the officiating astrologer invokes the aid of all the gods of the ten quarters, Buddhas, Boddhisattvas, sages, saints, &c., to help him in the work of mystic calculation:—

"O holy Lámás who have passed away, are now present, and will appear hereafter in this world, pray, bear me out in this test of TRUTH! O infallible prince of the Śákya race, O sage of Udyána, Padma Sambhava! O ye masters of the Sûtras, Tantras and the *mantras*, lend me your help in this test of divination, for nothing in this world is hidden from you.

"O *Rig-sum Gon-po* (Mañju) Śrí, Vajra páṇí, and Avalokíteśvara, Sañgye (Buddhas) Chañgsem (Boddhisattvas), the science of numbers and of the stars, the Sûtrántas and the sacred works on divine prophecies!—Judge ye all of my skill.

"O Brahmá Chaturmukha (thou with four faces)! O Nága Rájá whose head is formed of seven serpents! O mighty *Vijayá*, the goddess who rules over the elements! O sage Kapila Muni! O Kung-fu-tse (Confucius), the miraculous prince of China! O saints and Vidyádharas!—Ye are all witnesses to my work.

"O the four great sages of China, the four saints of Tibet, and the Pandits and Lochávas of India and Tibet!—Help me in this test of TRUTH.

"O ye five kinds of Brahma-Káyika Devas, who rule over the fire in the South, over the wood in the East, over the adamantine mountains in the West, over the Ocean in the North, and over the ethereal space in the middle region!—Bear me out.

"The eight great planets, the sun and moon, the Pleiades and the 78 constellations!—Do you all test the truth of my science.

"The great gods including Brahmá, the eight *nága* demons headed by Nanda, the four Mahárája Káyikas, the guardian kings of the world, and the seventy *Palgon* (the noble spirits who defend Buddhism)!—Help me in drawing true conclusions from astrology and the science of divination.

"The four celestial nymphs called Man-tsun Chen-mo, (Mahá Mátriká) who preside over medicine, the twelve sylvan goddesses called the Ten-ma Chuñi, who under a solemn compact have become protectors of Buddhism in Tibet, the local gods and demigods, together with your attendants, the kings and ministers!—Bear ye all witness to my work.

"The nine mystic figures called the *Me-va gu* and the eight gnomons on the chart of divination called the *Parha* and the cycle of sixty years!—Receive homage from me.

"The grey tiger that keeps the farthest end of the Eastern Quarter, the blue dragon of the South, the red huge bird of the West, and the golden tortoise of the North!—Receive your share of respect from me.

"I make this religious service which is threefold, being exoteric, esoteric and mystic, to honour you, and I make offerings to you for granting me power to arrive at accurate results in calculating astrological events and to divine correctly. Will you, therefore, explain to me the science of divination, and demonstrate every fact and figure connected with it as clearly as reflections fall on a mirror of polished silver?

"To-day we are to ascertain whether the youth and the maiden to be united are possessed of the ten virtues of matrimonial concord (*m*thun-*s*byor); the twenty characteristics of demeanour (*h*gro-lam); If they will deserve the ten kinds of dowry, and also the services of five men necessary for conducting wedding ceremonies. O Venerable Lámás and learned elders! Shew unto me all that is essential for astrology, and correct me when I err."

Then taking the names of the years of the birth of the males and females of both sides, the astrologer ascertains the chances of life, *i. e.* (longevity), accidents to the body, power (*wang-thang*), and prosperity (by observing the *R*luñ *r*ta *wind-horse* or fortune), and by setting these

four against each other by the throw of the back and white balls on the chart. The good and evil of life, and the *wind-horse* of the male's year being calculated, are set against those obtained from the female's year. Again the body and power of the female's year are set against those calculated from the male's year. If in the throw of the globules the white ones turn up in favour of the parties to be married, good luck is prognosticated, and the *thun-tsi* is ascertained.

If the good and evil of the life of the male harmonize in the calculation with those of the life of the female, longevity is counted upon. If not, the happiness of the couple will be short-lived.

If in the calculation the accidents to the body of the male agree with those of the female, the astrologer declares that the marriage will be happy in respect of issue. Want of harmony in the persons of the parties indicates barrenness.

If the *wang-thang* (power) of the male corresponds with that of the female, the astrologer declares that the parties will be prosperous in reference to wealth. Want of harmony in *wang-thang* in the parties indicates poverty and waste of wealth.

If the *wind-horse* (fortune) of the male agrees with that of the female, the marriage is predicted to be a very happy one, as love and concord are sure to attend them, and to be the guiding principles of their life. If the *wind-horse* of the one run counter to that of the other, the marriage is pronounced to be unlucky and unhappy, as the parties would then constantly fall out.

When parties are anxious to be married in spite of adverse astrological results standing against the union, the astrologer ascertains how many of the circumstances are favourable to the parties, and how many against them. If they agree in three-fourths of the circumstances, religious observances are necessary to avert the dangers consequent on the disagreement in the remaining one-fourth; but when at least one-half of the circumstances stand against the parties, no religious observance is supposed to be of sufficient efficacy to avert the dangers of an inauspicious union. The proposal is then dropped, and another maiden is sought.

The Tibetans use different kinds of astrological charts and calculations which are based on Indian and Chinese methods. The astrologer failing one kind of calculation tries another. When astrology fails, divination, by deciphering the mystic marks on the back of the fabulous golden tortoise is resorted to. In this manner the astrologer of Tibet makes a busy trade of his craft, the like of which is seldom seen either in India or China. Among the priestly crafts of Tibet none is considered so lucrative as that of the astrologer.

As soon as the astrologer declares that the *thun-tsi*, *i. e.*, the circumstances of harmony necessary in the marriage are favourable, the parents consult their friends and relations in order to ascertain the suitability of the match, and send one or two *bar-mi* (go-betweens) to ascertain the views of the maternal uncle of the maiden selected regarding her marriage. He generally withholds his opinion under various excuses. According to the customs of the country the *Shańgpo* (maternal uncle) of a maiden is the real arbiter of her fate in the matter of marriage. Nothing can be settled without reference to him. When his leave is secured the marriage proposal can be formally made to the maiden's parents.

The *bar-mi* with the permission of the *Shańgpo*, on an auspicious day during the increasing lunation of the month, proceed to the house of the parents of the maiden to present them with the *lóng-chang* (in Sikkim *nang-chang*) and therewith formally make the proposal of marriage. The word *lóng-chang* is derived from *lóng*, to beg or apply, and *chang*, wine, meaning the present of wine to apply for marriage, In Sikkim the candidate for the maiden's hand accompanies the *bar-mi*. but in Tibet the case is otherwise. On the way they observe omens and prognostics. If they see any empty vessel they turn back.

The *lóng-chang* consists of the following: at least a gallon of wine, a silk scarf, five silver coins, and five or nine kinds of things placed on a tray. The *lóng-chang* is required to be carried by a man who has been the father of several sons and daughters. Under no circumstances is a widower, or one who is childless, or whose children have died, allowed to carry it. The parents of the maiden receive the *bar-mi* with politeness, and serve them with wine and tea. After emptying one or two cups of tea the *bar-mi* present them with a scarf, and beg for leave to state their mission. The parents at first shew some indifference to their request, and try to turn the conversation on some current topics of the day. The *bar-mi* press the point they are interested in, and say that they have come with the *lóng-chang* to beg for the gem (their daughter). They are then told that the giving up of the *norbu* (gem) is no trifle, and so they should not be too sanguine about getting it.

If, after repeated entreaties, they succeed in getting any assurance of good will from the maiden's parents they open the wine bottle belonging to the *lóng-chang* and pour wine into the cups of the friends and relations of the parents who happen to be present on the occasion. At this stage the parents make the following remarks:—

"According to the common saying of the country the maternal uncle is the owner of one half of the person of his niece or nephew, just as half the cloth of a robe belongs to the sleeves. Accordingly if the

maternal uncle of our daughter, and also her relations and friends, agree to the proposal, it will be possible for us to accept the *lóng-chang ;* but otherwise we must return it."

It is therefore necessary first of all to arrange the marriage business with the maternal uncle. The proverb says, "Both in marriage and merchandise there should be no kind of solicitation." So the party that has won the maternal uncle over to his side need not shew any anxiety for the acceptance of the *lóng-chang.*

If the *bar-mi* can any how induce the parents to drink a cup of wine from the *lóng-chang* the betrothal is effected. But they studiously avoid partaking of anything pertaining to the *lóng-chang* before consulting the maternal uncle.

Marriage Ceremonies of Tibet (U and Tsang).

After accepting the *lóng-chang* the parents of the maiden in consultation with the *lóng-mi,* called *bar-mi* in Sikkim, and the astrologer fix an auspicious date for celebrating the marriage.

The bridegroom remains at home. His friends and relations proceed to the house of the bride's parents to fetch her. No music nor dancing mark a Tibetan marriage at the outset.

On the appointed day the parents of the bride make the necessary preparations for receiving the bridegroom's party who come dressed in their best apparel. Being seated on low or high cushions, according to their respective rank and position, the guests are regaled with tea and wine and dainty dishes. A quantity of barley flour, red potatoes, biscuits and cakes in wooden trays, and meat (boiled, dried and raw) in brass and silver trays, are placed before the principal guests.

In the meantime the bride is taken to her toilet. First her hair is washed, to which she reluctantly submits, shedding tears at the idea of separation from her parents and friends. These try to console her with kisses and show of affection. Her nearest female relations come to soothe her mind with kind words. The bridesmaid (sent from the bridegroom's parents), comes to help her in her toilet; She plaits her hair and dresses the locks in the form of a crown decorating them with strings of pearl, and turquoises. She then puts on her ornaments of gold and silver, coral, amber, ruby and other precious stones.

The marriage festivities generally last for three days at the house of the bride's parents, when their friends and relations avail themselves of the opportunity of shewing their good-wishes to them by making presents to her. The parents first arrange for the dowry, then the relations send their presents, and last of all come the personal friends and acquaintances of the bride to make the bridal gifts and to wish her a

long conjugal life, of prosperity and happiness. The presents are then collected and made over to the best man with a list of them. As soon as he comes to receive them, the companions of the bride by way of of a joke, secretly remove his earring, head dress, wrapper or any other article they can get hold of belonging to him. At the time he takes no notice of their jokes, but on the following morning he complains to them about the loss of his things, and offers a reward for their recovery. A present of three to four *srang* (ounces of silver) to them secures him the return of the lost things.

A Tantrik priest called *Ñag-chang* performs the ceremony of propitiating the *Pholha* (the household god) with incense burnt at a conspicuous place. The representative of the bridegroom now makes a present of five or nine varieties of articles to the mother of the bride, and says that as the usage of the country sanctions the offering of what is called the *nu-rin* (the price of mother's milk) she must accept it.

When the bride leaves the house of her parents which is usually done a little before the dawn, the *Ñag-chang* burns some incense to please the *nága* demons who (are supposed to) live underground within the premises of her parents. These unseen beings are believed to be often attached to some individual member of a family so as to follow them like a dog wherever they happen to go. It is the duty of the *Ñag-chang* to keep them back by the efficacy of his charms and prevent their following the bride to her husband's place.

The *su-mi* (the bridegroom's people who come to escort the bride) and *kyel-mi* (men who escort her to her husband's place), and the *bag-yog-ma* (female attendant of the bride), proceed to the altar of the household god of the family to take leave of him. They make three salutations to him each time taking their hats off.

Then coming out of the house they seat the bride on a stool placed at the door. A priest (of the Bon religion) now performs the ceremony of *yangûg* (invoking good luck) by reciting some mystic charms and walking round her from right to left in the manner of a *Bon* religious circumambulation. When this is done, a small arrow studded with five precious stones and with five scraps of silk of five colours attached to its pinnacle, is fixed on the neck of her dress, its point touching the top of her head-dress. She is then placed on the back of a pony and slowly led to her future home. The parents with tears in their eyes now come to bid her farewell, and present her with the auspicious scarf called *tashi-khatag*. They send the *kyel-chang* (farewell wine) to be served to her at a short distance from the gate of their residence.

The bridal party then proceeds towards the bridegroom's house, being heralded by what is called *ta-kar mi-kar* (a man in white

riding on a white horse). An amulet containing some mystic charms to protect her against evil influences and the evil spirits of the ten quarters, is now worn by the bride. This is considered very essential for her well-being at this time. When a bride proceeds to her future home unprovided with this indispensable safeguard she is sure to fall under the malignant influence of evil spirits. For during her journey from the place where the farewell wine is served, *i. e.*, where she parts company with her parents and friends, and the place where she is first received with what is called the *welcome-wine*, she is not accompanied by the guardian spirit either from her father's side or from the bridegroom's quarter. As soon as the bride approaches the house of the bridegroom, a second batch of *su-mi* (people sent to receive the bride), dividing themselves into three parties, wait at three different stages on the way to refresh her with the *welcome-wine*. At each of these places she stops a few minutes to receive the *welcome-wine* and the auspicious scarves.

As soon as the bridal party arrives at the gate of the bridegroom's house, his friends, fearing lest some evil spirits may have followed the bride from her father's place, make arrangements to drive them off. For this purpose they bring the devil's effigy made of cloth or barley, painted with coloured butter, and throw it on the ground before the bride. The *kyel-mi*, i. e., those who have come from her parents' house to escort her, here take offence at this demonstration of groundless fear on the part of the bridegroom's people. They keep a sharp eye on the man who throws the devil's effigy, and, if possible, catch him in the act and tear his clothes to pieces by way of punishment. They let him off on extracting from him the promise of the payment of a fine of two or three *srangs*. In their turn they now try to find fault with the arrangements made for the bride's reception. It is customary to hang a piece of long silk scarf from the top of the gate on the occasion of the arrival of the bride. The bridegroom's people let the scarf drop for a moment and then lift it up. The bride's friends try to catch it and take it away to the bride's parents in token of their triumph over the bridegroom's party. Then the officiating Tantrik priest recites a few benedictory verses, &c., describing the door, house, &c., of the bridegroom.

"Hail, self-existent Dharma! Let there be happiness to all living beings. The lintel of this door is yellow, being made of gold. The door-posts are cut out of blocks of turquoise. The sill is made of silver. The door frame is made of lapiz lazuli. Opening this auspicious door you find in it the repository of five kinds of precious things. Blessed are they who live in such a house. Let them enjoy long life without being troubled with sufferings and dangers. Prosperity be theirs, and let there be no limit to their wealth. O, happy couple! If you wish to

found a family you should first do homage to the three Holies (Buddha, Dharma, and Sangha). Secondly, you should extend your charity to the poor and the fallen. Thirdly, your compassion to all living beings should be unlimited. We come from our fatherland, the country of gems, to open the mines of five precious metals, and to plant the root of generation. We have come indeed to execute a high mission, so do not close the door against us. Open it that we may enter."

Then the mother of the bridegroom, dressed in her best apparel, with a tray containing the *dah-dar* and some barley flour mixed with butter, in her right hand, and with a jar full of milk in her left hand, comes to receive the bride and to present her with the *tashi-khatag* and *che-mar* (the buttered barley). The bride helped by two female attendants alights on a stool which is covered with a rug containing the figure of the *swastika*. She is conducted by her mother-in-law to the marriage altar, and seated to the left of the bridegroom.

The carpet on which they sit usually contains the figure of the *swastika* and the floor of the room is painted with a paste made of wheat-flour, and water. The bridal party consisting of the *kyel-mi* and the *su-mi* then enter the reception hall after tasting a little *che-mar* (buttered barley), at the threshold. The friends of the bridegroom sit in the left row, the seats on the right row being reserved for those who come on behalf of the bride's parents. A sumptuous dinner is served to them. In the meantime the friends and relations of the bridegroom come to offer their *tashi-khatag* (auspicious scarves) to the married couple, and to make presents to them. It is customary with them to supply the provisions necessary for the entertainment of the first day. On this occasion all the neighbours of the bridegroom also take part in the festivities and make presents of cloth, gold, silver, &c., with auspicious scarves according to their means and taste.

Music and singing are kept up throughout the day. Then when the auspicious hour of solemnizing the marriage arrives the *Ñag-chang* makes offerings to the gods, and gives a new name to the bride, connecting it in some manner with the name of her mother-in-law. When this is performed a small piece of wood, about six inches long, is held to the lips of the bridegroom. The bride now sits in front of her husband, and takes the other end of the wood between her lips.

In the meantime a tuft of wool is placed in the hands of the bridegroom who draws out the fibres to some length. The bride takes it from his hands and twists it into a thread. This is called the ceremony of the first work of harmonious union. Then the party of the bride separate from that of the bridegroom, and sitting in rows of seats facing each other sing repartee songs. When the festivities terminate the bridegroom dismisses the *kyel-mi* with suitable presents.

PART II.

Marriage Customs in Sikkim.

The marriage ceremony takes place generally a year after the acceptance of the *Ñag-chang* though it is not unusual with the rich to have it performed after six months when the parties to be united are of proper age. On this occasion too, the influence of the *Ashang* (maternal uncle) continues to be paramount. The party of the bridegroom entertains him with rich food and wine to obtain his final sanction to the marriage. The entertainment that is given to him is called *den-chûng*. The suitor, however poor he may be, must, at least, contribute a roast fowl to the dainty feast that is prepared for him.

The *bar-mi* (intermediators) settle the price of the bride with her parents, who say that the *gem* in question being very valuable cannot be parted with easily. At last the price is settled, which among the poor people of Tibet living in the frontier generally comes to a few score of *tankas* or *srangs*, according to the resources of the bridegroom. The *bar-mi* then take the permission of the bride's parents to appoint an auspicious day for celebrating the marriage ceremony. This done their duties are at an end.

The maternal uncles of the parties or their representatives now come forward to conduct the marriage as *dodag* (managers). In Sikkim and Bhutan the *dodags* are furnished by the respective parties with what is called *bar-zen* (the mediator's fee) usually estimated at ten per cent. of the price of the bride.

So long as the marriage is not completed, the position of the bridegroom is considered to be that of a suppliant beggar. In Tibet he is received with some consideration, but in Sikkim and Bhutan his position is far from being enviable. But as soon as the marriage is settled, and the price of the bride fixed, his maternal uncle begins to assume a position of equality with that of the bride's maternal uncle.

He cites the common saying. "*Da-va mé-na ñen mi-kyab.*" Where equality (of position) is wanting there should be no marriage.

The question now arises where should the two parties meet to conduct the wedding ceremony. The suitor's maternal uncle endeavours to have it done according to the old customs of the country at an intermediate place between the residences of the two parties, but the bride's party do not agree to this. At last the former yields to the latter, and the wedding takes place at the residence of the bride's parents.

On the day of marriage the *bar-mi* again meet for the definite settlement or payment of the price of the bride. They are paid the usual mediation fee of five *rupees* or *srang* from each side.

If the bride belongs to the higher class, *i. e.*, the nobility, she is

valued at 18 ponies (each pony being valued at Rs. 50), and a present of nine articles called the *gu-tshan* consisting of the following:—a gold *mohar*, eight ounces of silver, a silk robe, a matchlock, a robe of thick Tibetan serge, called *purug-go*, *khamar* (wrapper made of raw silk), *baborma* (a good milch cow with a calf), a silk scarf of superior quality.

The price of a bride among the middle class is estimated at 12 ponies and a present of five different articles.

In the case of the poor the price of a pony is estimated at 50 lbs. of butter. If it is understood that the bride will bring with her a male and female slave her price is raised by two ponies, and the entire carcass of a pig or sheep thrown in.

The value of a bride among the common people is fixed at four ponies with a present of three things called the *sum-tshan*.

According to the common saying of the country, the price of a bride is in fact due to the mother. In Tibet it is called *nu-rin* (the price of mother's milk). The mother does not personally accept it on any account, but when parents do receive it according to the usage of the country, it is understood that double the amount of the price received should be given to the bride as *peejong* (dowry). This dowry becomes *peema*—the personal property of the bride, and corresponds with what is called *stridhan* in India.

When the marriage takes place at an intermediate place, the provisions necessary for the entertainment are supplied by both the parties—the largest share being borne by the bridegroom. In Sikkim he is required to furnish what is called *shya-gyu*—the carcass of a bull slaughtered for the occasion. When the marriage takes place at the house of the bride's parents they entertain their relations, friends and neighbours for one whole day with rich dishes and *chang*. The wedding ceremony takes place at or before noon, when the *don-ñer* or *khalenpa* delivers a harangue to the assembled people—and invokes the gods and the spirits of the ten quarters.

A respectable man of the village, who is blessed with sons and daughters, and has means, is appointed to perform the *khalen* as follows:—"The three Holies (Buddha, Dharma and Sañgha), the united body of the sainted Lamas, the spirits of the ten quarters, the guardian gods and defenders of Buddhism, the four great spirit kings, the snowy mountain Himalaya, the divine keepers of the sacred places and sites, the tutelary deities and guardian angels, and such other gods and spirits whom the parents of the bridegroom and bride propitiate, and ye celestial beings henceforth protect this married couple, named ——— and ———. From this day he will be hers and she his. They will be mutually responsible to each other for their respective conduct.

"He will not allow her to be ravished, or seduced by another man, nor will she allow him to fall under the influence of another woman. He will not in any way deprive her of her personal properties, nor allow other men more or less powerful than himself to rob or purloin her personal effects. They are united together this day in our presence, and ye gods and saints bear witness to their wedding." To this the couple, seated by each other's side, nod assent when the *don-ñer* throws a fine white silk scarf called *tashi khadag* on their heads.

Then the relations and friends of the bride and bridegroom present them each with a silk scarf, and in terms of affection wish them a happy life. This ends the first stage of the marriage ceremony called *ñen*, marriage. Though the price of the bride has been paid, and the *khalen-pa* has announced the wedding to the public, yet the married couple are not permitted to enjoy the honeymoon until a year has expired, or till the festivity of *chang-thûng* (drinking) has been performed. During this time the bridegroom is required to make frequent visits to his father-in-law's house with fancy presents for his spouse. In fact, this is the period of courtship with Tibeten-speaking people. Among the agricultural tribes of Sikkim and Bhutan this period is called *dor-gyug* (the period of servitude). The common saying among them is that "a son-in-law, though he is not a slave, must serve his father-in-law and mother-in-law, for at least three years before he can enjoy the person of his bride." This term of three years in the case of the lower classes is counted from the time of *lóng-chang*. Among the higher classes betrothal, marriage and *chang-thûng* are all finished within a year. It is in the case of the middle classes that these ceremonies extend over two years. The period of *dor-gyug* among the humbler classes can be conveniently shortened by payment of money, or by the present of five varieties of articles to the bride's parents

Chang-thung (the festival of drinking).

This final ceremony of marriage generally takes place one year after the *ñen* (formal marriage). The bridegroom again sends two *bar-mi* to ascertain the wishes of the bride's parents regarding the time of *chang-thûng*. This is considered the most delicate part of the marriage business, or *behu bumoi lón joi* as it is called in Sikkim and Bhutan. The parents and friends of the bride try on the slightest pretence to postpone it indefinitely in order to extract more service from the bridegroom. The *bar-mi* therefore exert themselves with much tact and care to ensure success in inducing the bride's parents to agree to *chang-thûng*. This being arranged, they consult the astrologer to fix an auspicious day for commencing the festivities and to prepare the

bride's horoscope. The marriage hour called *bag-kar*, (the *marriage-star*) occurs only once in a month, so the day in which the auspicious hour falls is selected for the wedding.

The festivity of *chang-thûng* extends over six days, the entertainment of the first three days takes place in the house of the bride's parents, and that of the remaining three days in the bridegroom's place.

The first day of the festivity is called the *dóng-chang*, *i. e.*, the day of the first drinking, when the *don-ñer* again invokes the gods and spirits in the terms stated above. The second day of the festivity is called *chang-thûng-chenpo*, *i. e.*, the day of grand drinking when also the *khalen* is made with much warmth. As soon as the *don-ñer* finishes his harangue, the Tasí-kyi-Lama begins his work—the ritual of auspicious offerings to the gods and spirits. These offerings, called *tashi torma* are made of barley flour and wheat decorated with wafers made of coloured butter, in the shape of *chaityas* and fancy temple-like structures. With these the head of the bride is first touched and then they are thrown towards the spirits, who are supposed to have assembled in space at the exhortation of the Lama. The third day of the festivity is called *Chang-ser*, *i. e.*, the day of the golden drink.

On the evening before the *dóng-chang* the bridegroom's people proceed to fetch the bride. The party consists of one or two valets of the bridegroom, four or five of his relations, including the *Ashang* (maternal uncle) who generally performs the *rôle* of the best man, two or three men called the *na-thi* (guides of the bridal party), the *pag-ró* (bridesmaid) the *hhyûng bag-ko* (the maid of honour), the bride's page who carries the bride's jewellery, &c., and a number of servants. The bridegroom's valet performs the part of the thief (*kûn-chen*) which is considered a dishonorable and odious duty in the marriage affairs of these cis-Himalayan countries. The bridesmaid sits by the side of the bride and covers her lap with a piece of silken wrapper called the *pang-khep*. All these people who form the bridal party, are selected according to the directions supplied by the astrologer, and are supposed to be well-to-do people of good fortune. No widower, widow, or *tshang-nag-pa* (husband and wife, to whom no son has been born) or *rab-ché* (those who are barren) are ever allowed to join a bridal party.

In the morning preceding the day of *dóng-chang*, the order and arrangement of seats for the people coming from the bridegroom's house, and also for those belonging to the bride's parents are settled. The *sû-mi* come in the evening of that day, but the *kûn-chen* knowing how he will be dealt with by the bride's friends, loiters behind to seek for an opportunity to enter the house of the bride's parents in a secret manner. In his endeavour to do so he is assisted by the bridegroom, who having

been in the house of the bride's father, has become acquainted with every detail of it. The fencing round the house of the bride's parents is covered with the branches of thorny plants and nettles. Two additional fences are erected at some distance from the house for the purpose of stopping the *kûn-chen* and also to prevent his running away from the place.

Guards are stationed at each of these fences to watch the movements of the *kûn-chen* who nevertheless succeeds in entering the house either by scaling them, or by some kind of strategy. With the exception of the *pag-pon* and one or two of his respectable companions, the rest of the party are treated with sham contempt and mockery. When others are served with good *chang*, bad *chang*, refuse and coarse kind of food, intended for pigs, &c., are placed before them. These not unfrequently exchange sharp words with the female friends and companions of the bride, who sometimes in the way of joke, sometimes in earnest, seek an opportunity to annoy them. If they be a quiet sort of people they generally settle the sham difference with these women by a bribe called *mag-lóg* (the fee of defeat).

The *kûn-chen* in the dead of night, when all the guards are asleep, makes his way to the place of the bride's parents by either scaling the fences or breaking through them. He comes provided with a pair of leather, or felt boots, and some woollen, or thick sackcloth. On his arrival at the door of the house, he finds that it has been closed from within.

At this time the bridegroom tries all his resources to get him inside the house. He calls the *kûn-chen* by signs or by a whistle to enter the house by lifting up some of the loose planks of the floor from underneath the *hog-khang*, where pigs and cattle are kept. Sometimes he points out to him the weak part of the roof or a bamboo wall of the house through which a passage is possible. If possible the bridegroom quietly comes out of the house to help the *kûn-chen*. If the female relatives of the bride happen to be awake, they light torches called (*bag-zi*) to beat him. Some among them being friendly, or brought to his side by a bribe, try to extinguish the light. As soon as the *kûn-chen* enters the house he at once wraps himself up with all the clothes that he can get hold of therein. The women now come headed by the bride's sister to beat him with switches and thorny twigs in their hands. In spite of the help that he can obtain from those that are friendly to him, he gets a thorough beating. The more violent among the women beat him mercilessly, as if he were the real enemy of the bride. Unable to bear the beating the *kûn-chen* sometimes abuses them, and sometimes he falls on his knees to beg for forgiveness. Sometimes he feigns exhaustion, and

falling prostrate on the ground, salutes them saying, "O merciful ladies forgive me. I shall pay the *mag-lóg* (the fee of defeat)." If they do not beat him severely, he remains on the ground as motionless, or half dead, and does not pay the *mag-lóg*, and at the end appropriates to himself the articles of *mag-lóg* which the bridegroom gives him to compensate his supposed loss in the way of *mag-lóg*.

Sometimes the *kûn-chan* behaves very humbly towards the female friends of the bride, in consequence of which they treat him with less severity, but under no circumstance can he escape the beating altogether. In the morning of the first day of *chang-thûng* called the *dóng-chang*, he is placed in a conspicuous place in the reception-room, wrapped up in blankets and other thick stuffs.

Dóng-chang:—In the morning at about 8 o'clock, the guests consisting of the relations, friends, neighbours, &c., begin to assemble in the marriage hall. They bring with them each a basketful of *chang*, a bag of rice, and a potful of barley flour. Each guest, as he enters the hall, strikes the *kûn-chan* lightly with the switch kept there for the purpose. The *kûn-chan* expresses his pain in loud shrieks. Sometimes when wanton boys apply the switch freely to his body, he will rush at them furiously. When the *kûn-chan* goes out to attend the call of nature, he is surrounded by the female friends of the bride, and is forced to sit on a log of the tree called *sam-shing*, the raw bark of which produces a blister when it touches the skin. The log is covered with nettles and other thorny plants so as to look like a horse. If he can be made to sit on the wooden horse they will hoot him with shrieks and laughter. If he does not sit upon it they beat him with nettles till he enters the room.

Chang-thûng chenpo:—On the second day of the festivities the neighbours, friends and relations of the bride's parents are entertained with wine, rice, meat, &c. The guests headed by the chief priest of the village, called *Tashi-kyi Lama*, present their respective scarves, together with silver coins, clothes, metal utensils, and *tashi-kha-tag* to the bride and express their good wishes for her. Some among the guests, who are near and dear to the bride, will present her with two or more scarves, saying that they present this scarf, called the *kyider* (the scarf of happiness), that scarf, called *gadar* (the scarf of joy), to wish her gladness, and so on. The guests also make presents of *tang-dar*, *i. e.*, a scarf with a Tibetan *tanka* or a *rupee*, to the *pag-pon*, *i. e.*, the best man and the bridesmaid. As soon as the scarves and other presents are brought the *don-ñer* (receiver of guests) announces the name of each donor. The money presents are deposited in a silver pot kept for the purpose on a small table before the bride. Then some one from among the

bridegroom's friends acknowledges the presents, &c., by saying *thug-je che* (great mercy). At this time the *kûn-chan* remains in his solitary seat, but unmolested by anybody. Till midday he finds himself very solitary as no one talks to him or makes any fun with him. When the presentation of scarves and *tang-dar* is finished, the guests sit at dinner, and drink *chang* to their heart's content. After dinner the guests touch the *kûn-chan's* head with their sticks. Some beat him lightly with the switch. This is called *solgyab* (after-dinner beating).

The guests are served with *chang* and tea in the aftenoon when they again play the same kind of practical jokes with the *kûn-chan.* This is called the *chang-gyab* (beating after drinking). In the evening buttered tea is served to them with barley flour or parched Indian-corn. Again they beat the unfortunate *kûn-chan* lightly with their sticks. This is called after evening-tea beating. When he has quietly undergone these indignities, the women taking pity on him cease to beat him any more. They ask him to drink *chang.* Sometimes a wooden bucket filled with *chang* is given to him. A servant then hands over to him a china-cup called *yangtse* with which he draws wine from the bucket. Then a trayful of half-baked beef or fowl, mixed with red pepper and kitchen soot, is placed before him. The female friends of the bride again come to annoy him. This time, catching him by his ears they force a quantity of under-done beef into his mouth. Some make him drink *chang.* Then the principal guests sing some benedictory songs, and offering their prayers to the Buddhas and the Boddhisattvas, to bless the married couple, they return to their respective homes.

Chang-ser :—On the third day of the festival, called the *golden drinking,* the neighbours and relations of the bride's parents again assemble to a grand dinner and drinking, when large quantities of beef and pork are given to them to eat. Two or more oxen or pigs, that have been slaughtered on the previous day, are cooked in large cauldrons with red-pepper and salt. The beef and pork so prepared, are called *shya-gyu* and *sha-phag,* respectively. At midnight of the third day the *kûn-chan* runs away quietly. If the women can catch him while running away they give him a good beating, which is called *dol-ñon* (the beating before he escapes). It is for this reason that the mother of the bride takes especial care of him and secretly arranges for his flight. The *kûn-chan* having effected his escape, proceeds to the rest-house that has been especially erected for the bridal party midway and waits there. Here he changes his clothes and becomes transformed into a great man called the *ṭha-pon.* The bride's mother sends some wine, beef and rice for his refreshment.

When the festivities at the house of the bride's parents terminate,

the officiating Lámá makes offerings to the gods at the auspicious moments called the *du-tsi jor* (in *Sanskrit* Amṛita yoga), the moments called *chi-jor*, the conjunction of the malignant stars, being avoided.

The offerings are first applied to the heads of the bride's parents and then thrown away, generally at the junction of two roads. At the same auspicious time the bride sets off for her future home. The astrologer new furnishes instructions on the following points:—

1. In what direction the bride should first look on starting.
2. What food or thing she should taste on her arrival at her husband's house.
3. What should be the year of birth of the woman who dresses her hair.
4. To what work the bride should put her hands first.
5. What should be the year of birth of *pag-pon*, the best-man.
6. The name of the man, who should first serve the bride with food.
7. The name of the man who should conduct her to her husband's house.
8. What should be the colour of the horse to be used for her conveyance.
9. The colour of the cushion, on which she should sit on arriving at her husband's house.

The bridal party start early in the morning. The bride is now surrounded by her friends and female relations, who shed tears on parting with her. The *pag-pon* (best-man,) the bridesmaid, *khyûn-bag-ko*, and other attendants who form the *sû-mi*, take charge of her from her parents. Some of her father's relations and friends join the party to escort her safely to the bridegroom's house All the people who form the bridal party are called *kûn-don*. If the bridegroom's house be a day's journey distant the *kûn-don* halt at some convenient place midway for refreshment, where a tent or temporary shed has been erected for the purpose. At this time they are not allowed admission into any dwelling-house. It is believed that a malignant spirit called *dong-ser-geg* always walks before the bride, and those who fall in his way suffer all kinds of danger. It is for this reason that passers-by turn aside when they happen to come across a bridal party.

Here the *kûn-chan*, now transformed into a great man, waits for the bridal party. He is called the *ṭha-pon* (hawk-chief), for having come out of the ordeal successfully, *i. e.*, having snatched away the bride from the midst of her parents and friends like a hawk. Here he becomes the leader of the party, his position being second only to that of the *pag-pon* (best-man).

In the meantime the bridegroom sends another party of *sû-mi* with

chang-gyûg (wine for welcoming) to receive the bridal party. These dividing themselves into three parties, wait on the way in three stages. They carry with them a number of bamboo bottles of boiled *chang*, and reeds for sucking the liquor from them, and one or two heavy loads of fermented *chang* (*mur-wa* beer). At each stage they burn incense to the gods in large quantities for the purpose of purifying the atmosphere and also to drive away the evil spirits.

The first division of *sû-mi*, that meet the bridal party midway inform the *ṭha-pon* of the health of the bridegroom and the arrangements for their reception, and the *ṭha-pon* in a short speech asks them to partake of the *welcoming wine* sent for their reception and refreshment. He first invokes the gods, &c., then drinks *chang*. The invocation consists of the following:—

"The highest reverence is due to the three Holies. The guardian deities and tutelary deities claim our adoration with precious objects. By the blessings of the Lámás and the kind advice and predictions of the Dákinís, angels that soar on high, we succeed in all our worldly undertakings. The secrets of our success are supplied by the tutelary deities, and the Dharmapálas protect us by driving away the evil spirits from our neighbourhood. Let all the dangers and accidents to life that await us be averted! Listen to our prayers, and in return for the service we have rendered to you grant us health, wealth and all that the married couple may be in need of. O extend your helping hands to them at all times!"

Those who wait at the second stage raise a bower of green branches and leaves of trees for receiving the bride. Here a fire is kept burning and water boiling in a large cauldron. This is called the *thab-so* (keeping of the hearth). A kid is kept tied to a post at the entrance of the bower. Two or three long bamboo bottles called *pádûn*, filled with water and decorated with wreaths of flowers, are also kept outside the entrance of the bower. Here the bridal party is regaled with *chang* and tea.

The last place where the bridal party is given the most cordial welcome is the *tangra* (outer courtyard) of the bridegroom's house. Here a man waits with a wooden tray containing the *chang-ki yang-tse* (a large cup full of wine) on the brim of which are stuck five crumbs of buttered barley called the *yaga*, a quantity of *chemar* (butter and barley flour mixed together), and the *dah-dar* (arrow with the five-coloured flags at its pinnacle). The bridal party as they enter the courtyard touch the wine and other articles at the entrance.

In the bridegroom's house his mother makes the necessary arrangement for the reception of the bride and the *kûn-don* (bridal party). She

prepares the marriage-cake service, called the *ama-kha-don* (mother's first entertainment). This consists of cooked rice, buttered barley flour, a ball of butter, cakes and some fruits. In a separate vessel is kept the food intended for the bride, which she is to taste first according to the directions of the astrologer.

The *Tashi-kyi-Lámá*, who has constructed some fancy cakes painted with coloured butter for offering to the gods and the spirits of the ten quarters, now draws some mystic figures on a small table for the *yang-gûg* (invoking the goddess of luck and fortune). A priest with a sacred book in his arms stands behind the door to touch the head of the bride with it as she enters the room. He must not stay there after doing his work. The *pag-pon* will beat him with a stick if he finds the priest lurking there. The object of touching the head of the bride with a sacred book is to prevent any evil spirit that may have come with the bride from entering the house. If the priest fails to touch her he is severely punished. At this time a gun (generally a matchlock) is fired to frighten the evil spirit so that he may run away as quickly as possible.

Then the *kûn-don*, headed by the *pag-pon*, take their respective seats. The *Tashi-kyi-Lámá* sits at the top of the central row of seats. When they are served with tea and *chang*, the *ama-kha-don* is brought and placed before them. The *ṭha-pon* (who on the preceding day acted the part of the *kûn-chan* or thief) now dressed like a chief comes forward to address the assembly, on behalf of the mother of the bridegroom, and tells them that everything has been arranged according to the custom of the country, and that the *ama-kha-don* has been placed before them for their acceptance. Then the *don-ñer* (receiver of guests), as the representative of the father of the bridegroom, presenting compliments, inquires of the health of the *kûn-don* if they have not been much fatigued on account of the journey, the difficulty of passage and the want of bridges over the hill torrents, &c. The *pag-pon* replies to his queries in polite language. After some conversation and exchange of congratulations they begin to refresh themselves with tea and *chang*. Dainty dishes are served to them at noon, or a little after. This day is called the *dóng-chang* at the bridegroom's house. All the provisions required for the entertainment on this day are supplied by the sister and brother-in-law of the bridegroom. If they be poor the bridegroom's parents meet the expenses, The *ṭha-pon*, who while performing the part of the *kûn-chan* had suffered so many indignities from the hands of the bride's female friends, now receives his reward. He is furnished with presents in money, rice, barley flour, meat and *chang*.

On the second day of entertainment, which is called *chang-thûng-chenpo*, the relations and neighbours of the bridegroom assemble together when

a sumptuous dinner is served to them. Before touching the food, one of them invokes the gods, demi-gods, Buddhas, Boddhisattvas and the guardian spirits to protect the married couple. Then the *Tashi-kyi-Lama* recites the grace.

Marriage Customs, &c., of Ladak.

After the "betrothal" ceremony has been performed, a month or two is usually allowed to elapse before the wedding takes place, though sometimes a year or more passes between the time of betrothal and the time of marriage. When a day has been fixed for the marriage, the procedure is as follows:—On the day fixed, the relatives (*nien*) of the bride (*pakma*) assemble at the bride's house and those of the bridegroom (*pakphe*) at the bridegroom's house. At nightfall the bridegroom goes with five or seven of his friends (*ngiápa*) to the bride's house, he finds the outer door (*giázgho*) of the yard (*stara*) shut, and guarded by male relatives of the bride, he gives a few rupees to them, and they then allow him to enter, but when passing between this gate and the door leading into the house itself (*giázghoi nángkuk*) he is surrounded by the bride's female relatives, who pretend to be angry, and beat him with small sticks. To these also the bridegroom has to give a few rupees, and he is then allowed to enter the house. The bridegroom, with his friends, is then feasted by the bride's relatives, but the bride does not appear. Much *chang* drinking, music and dancing is indulged in, till about 1 or 2 o'clock the next morning, when the best-man (*ngiátheet-pa*) or (*ngiáthrit-pa*), accompanied by some of the older male relatives of the bridegroom, goes to the kitchen (*makhang*) in company with the parents and relatives of the bride. The bridegroom and the rest of his party do not go to the kitchen.

The guests take their seats in the kitchen, and each one puts his drinking cup (*norey*) on the ground in front of him, and *chang* is then handed round by a male relative of the bride's, accompanied by one of the female relatives, who has a stick in one hand. The latter takes up the cup of each guest in turn and fills it, and if the guest fail to drink freely, she beats him. This ceremony is called *nanchang*, or insistance *chang*. During this time a ceremony known as *thohloo* is taking place, it is enacted by two old men, one being a relative of the bride, and the other a relative of the bridegroom. First, the relative of the bride gets up and sings a sonnet in praise of the bridegroom; the other old man must then get up and reply, by singing a similar sonnet in praise of the bride, after which the first man again sings and so for two or three times; if either singer fails to reply to the other, he has to give the other party a few rupees, or a goat, &c. At this time the bride's parents stretch a rope across the room, and on it they hang all the clothes, ornaments, &c., which constitute the trousseau of the bride, any cash there may be as a *dot* is counted and placed in a box. These clothes, &c., are called *raktak*. A list of the articles is then made out; it is called *zongeek*, and is carefully kept, as a record of all the fine things given on the occasion. The best-man then takes possession of the *raktak* and remarks that it is getting late, and that he would be glad if the bride could be made over to him.

The bride's relatives then protest that they don't know where the bride is, as her girl friends (*yátó-dzámo*) have hidden her. The best man has to give a few rupees to the *yátó-dzámo*, who then produce the bride, who is in a flood of tears (often genuine), and lead her up to her mother. The bride then embraces the feet

of her mother, father, brothers, and other relatives, after which the best-man puts on the bride's head a hat called "*sham skor-i-teebi*" (with very broad brim, fur lined underneath, and velvet covered above), and over that he fastens a "*khatak*" or scarf of salutation, and then the bride's mother's brother (*Azhang*) takes the bride upon his back and carries her out to the "*giázho*," where a horse is in waiting for her. The first to leave the bride's house is the *ngiátheet-pa* (best-man) who is followed by the *ngiápa* (bride's relatives), then comes the bridegroom's relatives, then comes the bride (*pakma*), who has not yet been seen or spoken to, on that day, by the bridegroom, and the rear is brought up by the bride's friends, musicians and spectators. As the wedding party passes by other villages, on its way to the bridegroom's house, the villagers come out with offerings of satoo, ghee, &c., called "*kalchor*." The *ngiothee-pa* touches these offerings and remits them, and gives a small present to the person bringing them.

On arrival at the bridegroom's house, the door is found open, and in front of it are some Lámás (priests).

The bridegroom and his party dismount, and beg the bride to dismount; she weeping all the time, refuses to do so, but eventually the bridegroom's friends give her a present of a horse or a rupee or two, according to their wealth, and she then dismounts. Bride and bridegroom then stand up in front of the Lámás, with clasped hands and bowed heads, and certain prayers are read. The prayer-book is held by a novice or Lámá of low rank, and the *Hlo-bon*, or head Lámá reads from it. While doing so, he holds in his left hand a bell (*treeloo*) and a small drum (*daroo*), and in his right hand, a sceptre (*dorjey*) and some grains of rice and barley. He rings the bell and sounds the drum with his left hand, and with the right he scatters the grain over the heads of the young couple. The bridal party then enter the bridegroom's house where they find two mystic signs, traced by the Lámás in barley or other grain, on the floor. On one of these the bride sits, and on the other the bridegroom.

Between them is placed a measure, filled with grain in which is an arrow standing up and having a small pinnacle of clarified butter affixed to its top. The bridegroom's mother then offers *chang* to the bride and bridegroom, after which a Lámá comes and sprinkles them with holy water. This completes the religious part of the ceremony. The bridegroom, with all the males of the party, then goes to another room where dancing and merriment takes place. The bride with all the women of the party remains behind. After remaining a while, watching the dancing, the bridegroom is permitted to retire and rejoin his bride. During the whole of the next day, the merriment is kept up, and in the afternoon the bride, dressed out in all her best, and wearing all the jewels she possesses, comes out with her husband and walks round to shew herself off. She has to dance with the ladies of the party, and the bridegroom with the men. Having done this, they are at liberty to retire. The feasting is kept up that night, and the next day the guests go off to their respective homes. For seven days, bride and bridegroom remain in their house, but on the eighth day they must start on a journey, to make their bow to all their relatives. Having performed this duty, they return to their home, and begin their ordinary married life.[1]

Then the bridegroom and the bride are seated on two square cushions placed side by side touching each other, and the wedding vow is solemnly

[1] *Captain Ramsay's* "*Western Tibetan Dictionary*," pp. 97 and 98.

administered to them. The bridegroom accepts the bride as his, and she accepts him as hers. To this the gods and the spirits of the ten quarters, the saints, Buddhas, &c., are all invoked to bear testimony. Then the *don-ñer* coming out of the wedding-hall loudly proclaims to all present on the occasion and assembled in the courtyard, that he (the bridegroom) born of such a family and such a tribe, is married to her (the bride) born of such a family and such a tribe and to this union the gods above, the *Nagas* below, *i. e.*, from their abodes in the nether world, and the spirits of the middle region, *i. e.*, atmosphere, bear witness.

When this is finished fresh *chang* is poured from a jug in two cups, and presented to the bride and bridegroom. As soon as they have taken a sip or two of this *chang*, the parents of the bridegroom lift their respective wine cups to their lips to drink, when the guests follow their example. At noon the *Tashi-kyi Lama*, who has been conducting certain religious service in an adjoining room, brings the auspicious offerings prepared for the gods to be touched by the married couple. He recites a few benedictory *mantras* in order to bless them, and then touches their heads with the offerings and the *dah-dar*. The bride reverentially receives the tray containing the offerings together with the *dah-dar* from the hands of the *Tashi-kyi Lama*, and places them on her lap. The offerings are carefully preserved, being placed on the altar of the household god. In the meantime the guests one by one come forward to present the *ba-dar*, *i. e.*, the auspicious scarf of marriage, each with a rupee in his hand, to the bridegroom, bride, and the principal members of the bridal party, headed by the *pag-pon*, the best-man, who gets the largest share of presents. On this occasion the *Tashi-kyi Lama* whose part resembles that of a *Purohit* in a Hindu marriage, is required to make the largest present to the best-man. It is therefore commonly said that religious men, *i. e.*, priests and Lamas, should not attend a marriage ceremony, they had better be present at a funeral ceremony ("*Lámá choipa-de-tsho pag-ma lan sar-mando mi shi sar-do*"); because in a funeral ceremony all the effects of the deceased go to the Lámá, whereas in a marriage ceremony, he has to make considerable presents, instead of receiving anything in return for his services.

After the presentation of *ba-dar*, the distribution of uncooked meat, rice, *chang*, &c., in the way of remuneration to those who took part in the marriage, takes place. When this is over the grand feast takes place.

The dinner is commenced with the *don-ñer* saying as follows:—

"According to the common saying of our country, on the occasion of birth, and that of giving a name to a child, drinking of wine is the chief entertainment, but in a marriage ceremony drinking alone is not sufficient. It must be supplemented by a feast of more substantial kind

than drinking," *i. e.*, a heavy dinner is essential to add to the merriment of a marriage. Then meat and rice are served in large quantities to all those present on the occasion. According to the common usage the largest share of meat is generally given to the best-man, next to him the *tha-pon's* claim is taken into consideration, inasmuch as they had taken the largest share of trouble in the marriage.

The last day of *chang-thung* called the *chang-ser*, the day of golden drink, is marked in Sikkim by music and dancing, which is kept up during the whole day. It is indeed a day of merriment and revelry. Bacchanalians are sung each time the party go to refresh themselves with *chang*. It is said that in ancient times the marriage festivities used to be kept up for nine days and nine nights, but in these degenerate times the moral merits of the human race having diminished, the festive period has been reduced to three days. Then at the last stage of revelry when they have drunk to their heart's content, they finish the dance of marriage, each pulling one another's ears, and disperse. The married couple then retire.

One year after the ceremony of *chang-thung*, the bridegroom with his wife visits his father-in-law's home. The ceremony observed on this occasion is called the *pag-lóg* (return of the bride to her father's place), when new presents are made to the married couple by the parents of the bride. This completes the marriage ceremonies of the Sikkimese.

V.—*Measurements of Cingalese Moormen and Tamils taken at Ceylon in November* 1892.—*By the* Hon'ble H. H. Risley, C.I.E.

The following measurements of the three most numerous and characteristic races of Ceylon were taken in accordance with my instructions, and under my supervision, by Civil Hospital Assistant, Babu Kumud Behari Samanta, whom the Asiatic Society deputed to accompany me for this purpose on a recent tour in Ceylon. The instruments used were those recommended by Dr. Paul Topinard; the methods followed and the measurements adopted were based upon his work "*Les Elements d'Anthropologie Générale*," and upon personal advice from him and Professor Flower of the British Museum. In a later number of the *Journal* I shall attempt to give some account of the races in question, and to indicate briefly the conclusions which the measurements seem to suggest.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Serial numbers.	Name.	Caste.	Sub-caste, or sub-tribe endogamous.	Section, or sept exogamous.	District of birth.	Age.	Measurement round chest.	Measurement with extended arms.	Height.	Height sitting.	Height kneeling.	Height lower end of gladiolus.	Weight in pounds.	Cephalic length.	Cephalic breadth.	Cephalic index.
1	Sevanan ...	Parayan	...	...	Tinnevally ... S. India.	30	830	1620	1577	830	1165	1242	105	179	139	77·6
2	Muteuchati	Wellale	...	...	do.	30	760	1740	1700	892	1267	1260	114	186	146	78·4
3	Podisen ...	Parayan	...	...	Trichinopoly S. India.	30	780	1590	1540	802	1140	1150	...	180	141	77·3
4	Paranti ...	do.	...	...	Dekoya ... Ceylon.	25	860	1754	1620	840	1210	1220	...	191	140	73·2
5	Palanu ...	do.	...	...	Tondaman ... S. India.	35	810	1740	1650	810	1228	1240	...	190	144	75·7
6	Pachiá ...	do.	...	...	Karangola Cote, S. India.	40	845	1778	1624	826	1178	1184	118	188	146	77·6
7	Punusami ...	do.	...	...	Warderkebil S. India.	27	835	1702	1594	824	1180	1196	111	187	146	78 0
8	Punusami ...	Agamboty	...	...	Madura ... S. India.	30	805	1676	1620	800	1200	1226	111	181	143	79·0
9	Handi ...	do.	...	...	do.	35	840	1834	1706	840	1220	1202	119	181	144	79·5
10	Chulan ...	Parayan	...	...	Puthucota ... S. India.	32	820	1765	1648	822	1204	1224	109	184	148	80·4
11	Armogom ...	Belálas...	...	...	Trichinopoly S. India.	40	810	1620	1524	842	1158	1194	107	187	139	74·2
12	Marugar ...	Parayan	...	...	Arkadu ... S. India.	28	830	1650	1560	770	1140	1191	103	191	139	72·7
13	Kulan ...	Sakilian	...	...	Alanedu ... S. India.	34	875	1834	1686	830	1228	1282	124	191	147	76·9
14	Kolanda ...	Edian ...	...	...	Maradachila S. India.	30	795	1624	1614	820	1200	1194	102	180	148	82·2
15	Kandrewal ...	Parayan	...	...	Trichinopoly S. India.	26	845	1774	1634	774	1186	1222	106	191	141	73·8
16	Peran ...	Perlén ...	...	...	Putekudu ... S. India.	30	830	1776	1660	802	1212	1274	111	186	149	80·1
17	Luchman ...	do.	...	...	Trinevally ... S. India.	30	850	1720	1600	812	1174	1194	112	184	137	74·4
18	Fanini ...	Kalen ...	...	...	Onecote ... S. India.	25	810	1666	1546	776	1172	1164	95	181	145	80·1
19	Kalienti ...	Tamilia	...	...	Madras ... S. India.	40	830	1700	1626	834	1194	1210	110	184	144	78·2
20	Mutai ...	Sadia ...	...	...	Katpali ... S. India.	38	845	1782	1618	816	1186	1214	109	178	136	76·4
21	Kopendi ...	Palal ...	...	...	Chaigange ... S. India	30	835	1660	1532	756	1116	1146	98	176	138	78·4
22	Chowal ...	Pellé ...	...	...	Alangeote ... S. India.	30	815	1664	1588	774	1152	1196	94	173	147	84.9
23	Pararhé ...	Kalla ...	...	...	Konapati ... S. India.	25	835	1660	1600	810	1194	1210	106	189	142	75·1
24	Kisna Swami	Pellé ...	...	...	Tanjore ... S. India.	40	860	1672	1602	802	1186	1240	...	181	143	79·0
25	Sewsa Swami	Naran ...	...	...	Trichinopoly S. India.	25	880	1846	1700	846	1266	1280	...	190	139	73·1
26	Jaka ...	do. ...	...	...	Trinevally ... S. India.	35	860	1714	1570	798	1168	1172	...	190	134	70·5
27	Antom ...	do. ...	...	...	do.	40	845	1708	1668	872	1234	1238	...	192	164	85·4
28	Mute Swami	Pellé ...	...	...	Chowranda ... S. India.	35	845	1738	1690	858	1218	1258	112	189	150	79·3
29	Manike ...	Konar ...	...	..	Palechari ... S. India.	38	810	1668	1604	806	1168	1200	103	181	143	79·0

taken in Ceylon in November 1892.

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Bi-maxillary or bi-gonial breadth.	Maximum bi-zygomatic breadth.	Maxillary-zygomatic index	Nasal height.	Nasal width.	Nasal index.	Bimalar breadth.	Naso-malar breadth.	Naso-malar index.	Height from vertex to intersupervelliary point.	Height from vertex to tragus.	Height from vertex to chin.	Facial angle.	Length of fore-arm.	Length of left foot.	Length of middle finger of left hand.	Maximum breadth of hips.	Maximum breadth of shoulders.
100	136	73·5	47	38	80·8	113	124	112·3	91	133	215	65	436	245	105	282	382
100	131	76·3	44	37	84·0	109	124	113·7	101	130	230	67	467	254	108	283	400
95	127	74·8	45	36	80·0	93	106	113·9	89	132	208	65	436	254	113	373	422
101	127	79·6	49	40	83·3	107	126	117·7	96	130	218	65	460	247	120	260	402
107	138	77·5	46	38	82·6	102	116	113·7	90	135	214	66	457	257	105	268	376
110	136	80·6	48	38	79·1	98	112	114·2	95	133	216	67	477	247	114	257	386
98	137	71·5	47	35	74·4	101	114	112·8	90	135	225	60	446	231	103	257	397
101	126	80·1	44	44	100·0	94	102	106·3	100	136	228	58	447	234	112	257	385
101	135	74·8	48	40	83·3	106	114	107·5	100	131	230	68	483	263	119	271	425
101	131	77·0	46	40	86·9	97	116	119·5	94	131	220	66	457	243	117	276	397
96	127	75·5	45	37	82·2	92	106	115·2	92	128	221	67	454	256	112	283	378
100	129	77·5	47	42	89·3	102	114	111·7	92	136	226	62	445	242	107	254	364
111	133	83·4	44	38	86·3	104	118	113·4	100	140	222	68	482	255	115	267	412
101	125	80·8	48	41	85·4	94	106	112·7	95	140	216	62	444	247	113	271	378
101	132	76·5	43	38	88·3	107	120	112·1	87	120	211	70	494	253	116	258	377
102	131	77·8	44	39	88·6	101	114	112·8	96	129	216	66	471	245	116	262	387
95	128	74·2	42	38	90·4	97	108	111·3	99	130	219	70	467	238	107	271	412
99	127	77·9	44	38	86·3	92	102	110·8	96	135	225	63	431	222	97	224	377
104	138	75·3	45	37	82·2	99	110	111·1	99	137	225	65	473	246	109	263	382
92	128	71·8	46	40	68·9	95	108	113·6	82	130	215	62	477	248	112	252	370
94	121	77·6	45	36	80·0	95	102	107·3	87	129	218	68	453	222	110	255	390
96	128	75·0	44	36	81·8	97	108	111·3	90	137	209	68	465	250	110	250	374
101	130	77·3	45	41	91·1	95	106	111·5	85	135	212	70	468	242	111	245	378
105	131	80·1	48	41	85·4	97	114	117·5	82	130	213	68	455	244	106	290	393
100	127	78·7	39	37	94·8	95	104	109·4	92	128	213	68	495	258	118	258	411
106	131	80·9	45	40	88·8	94	108	114·8	95	122	213	69	448	248	117	246	409
97	139	69·7	53	45	81·1	101	112	110·8	93	146	227	72	473	256	112	278	396
106	124	85·4	43	42	97·6	95	104	109·4	97	129	212	69	470	225	114	268	380
99	133	74·4	44	41	93·1	93	104	111·8	95	134	205	69	457	248	111	225	377

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Serial number.	Name.	Caste.	Sub-caste, or sub-tribe endogamous.	Section, or sept exogamous.	District of birth.	Age.	Measurement round chest.	Measurement with extended arms.	Height.	Height sitting.	Height kneeling.	Height lower end of gladiolus.	Weight in pounds.	Cephalic length.	Cephalic breadth.	Cephalic index.
30	Beronuter ...	Parachadi	...	...	Peremboor ... S. India.	30	820	1688	1596	808	1176	1176	103	183	138	75·4
31	Kamde Swami	Hagam-badi.	...	...	Parencoti ... S. India.	38	862	1684	1628	836	1188	1188	113	188	152	80·8
32	Ramaswami	Agampota	...	...	Madura ... S. India	30	840	1666	1610	850	1176	1208	119	196	150	76·5
33	Tanti ...	do.	...	...	Madacheure S. India.	30	865	1800	1736	838	1270	1292	131	186	150	80·6
34	Mutoke ...	Ballálé	...	...	Puducota ... S. India.	30	870	1670	1372	802	1162	1152	121	188	147	78·1
35	Alege ...	Saikléal	...	...	Morde ... S. India.	40	720	1520	1502	744	1100	1136	92	179	139	77·6
36	Arlande ...	Parayan	...	...	Puducota ... S. India.	30	825	1732	1662	814	1226	1244	107	188	132	79·7
37	Rumandi ...	Kallem	...	...	Tanakamkelan S. India.	25	845	1674	1662	820	1212	1267	107	186	135	72·5
38	Mutsen ...	Naike ...	...	..	Palini ... S. Ind'a.	25	780	1694	1626	812	1192	1220	106	176	147	83·5
39	Chelle ...	Parayan	...	...	Tondapoti ... S. India.	40	740	1486	1500	750	1100	1152	100	179	135	75·4
40	Ochmall ...	Balu ...	...	...	Palancota ... S. India.	30	795	1668	1630	824	1194	1192	...	184	137	74·4
41	Ispodinada ...	Sanan ...	...	...	Bagbandi ... S. India.	30	820	1676	1644	760	1142	1142	..	190	132	64·9
42	Kapan ...	Pallan ...	...	...	Purtur ... S. India.	40	765	1538	1540	798	1150	1142	...	180	138	76·6
43	Towasi ...	Parayan	...	...	Palancota ... S. India.	35	820	1690	1612	798	1194	1198	...	191	143	74·8
44	Marian ...	do.	...	...	Trinevally ... S. India.	26	780	1700	1670	838	1238	1224	...	180	150	83·3
45	Ram Swami	Marapole	...	...	Wadakongco-long S. India.	26	785	1668	1628	822	1182	1210	...	187	145	77·5
46	Sanial ...	Nara ..	...	...	Naganari ... S. India.	28	790	1676	1604	834	1200	1206	...	176	140	79·5
47	Narmalinga	Bellálé ...	...	...	Colombo ... Ceylon.	26	770	1694	1676	818	1226	1254	...	180	145	78·3
48	Sonagalilum	Parayan	...	...	Trinevally ... S. India.	30	830	1670	1612	824	1178	1198	...	182	145	79·6
49	Ored ...	do.	...	...	do.	30	855	1768	1718	870	1248	1262	...	186	142	76·3
50	Sangleli ...	Sakli ...	...	...	Ravanagar ... Ceylon.	40	850	1874	1703	850	1236	1260	...	190	146	76·8
51	Ram Swami	Parayan	...	...	Palamcota ... S. India.	30	800	1700	1664	852	1252	1254	...	191	146	76·4
52	Sepan ...	Edayan	...	...	Trinevally ... S. India.	28	750	1551	1520	760	1112	1136	...	165	137	83·0
53	Kumar Swami	Bellálé	...	...	do.	28	800	1730	1640	830	1212	1210	...	185	153	82·7
54	Énaparcs ...	Nara ...	...	...	do.	35	830	1640	1620	846	1190	1192	...	182	141	77·4
55	Narain ...	Bellálé ...	...	...	Tanjore ... S. India.	30	750	1588	1560	788	1158	1158	...	181	146	80·6
56	Ram Swami	Rata ...	...	..	Trinevally ... S. India.	45	845	1870	1800	854	1290	1135	...	180	150	83·3
					Average ...		821·2	1696·2	1666·7	816·5	1191·9	1209·3	108·6	184·2	143·2	77·7

taken in Ceylon in November 1892.

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Bi-maxillary or bi-goniac breadth.	Maximum bi-zygomatic breadth.	Maxillary-zygomatic index.	Nasal height.	Nasal width.	Nasal index.	Bimalar breadth.	Naso-malar breadth.	Naso-malar index.	Height from vertex to intersuperciliary point.	Height from vertex to tragus.	Height from vertex to chin.	Facial angle.	Length of fore-arm.	Length of left foot.	Length of middle finger of left hand.	Maximum breadth of hips.	Maximum breadth of shoulders.
91	127	71·6	45	36	80·0	94	106	112·7	89	130	212	64	463	250	110	267	394
105	136	77·2	45	44	97·7	99	110	111·1	91	136	220	67	462	255	113	267	390
110	134	82·0	46	40	86·9	100	108	108·0	90	134	220	69	456	252	114	272	374
116	141	82·2	47	42	89·3	101	112	110 8	103	142	235	67	505	263	127	278	401
108	135	80·5	49	38	77·5	103	112	108·7	96	125	229	60	462	244	111	274	378
96	123	78·0	43	39	90·6	92	108	117·3	90	124	206	67	426	223	100	226	338
111	131	84·7	47	36	76·5	91	100	109·8	100	138	221	68	462	246	116	257	383
96	125	76·0	45	38	84·4	98	108	110·2	102	129	222	61	442	241	103	242	406
105	127	82 6	42	35	83·3	99	108	109·0	97	134	210	65	460	247	112	250	362
95	121	77·8	41	38	92·6	97	106	109·2	86	124	198	65	412	242	105	252	342
101	131	77·0	43	43	100	94	104	110·6	85	125	225	65	471	249	114	261	379
106	129	82·1	47	36	76·5	96	106	110·3	80	136	211	73	457	239	109	258	382
87	121	71·9	41	42	102·4	97	106	109·2	90	123	208	64	443	236	112	256	363
107	135	79 3	48	41	85·4	95	106	111·5	94	120	218	68	370	257	113	249	389
96	131	73·2	48	38	79·1	98	108	110·2	88	130	218	63	462	248	108	261	387
100	131	76·6	42	37	88·0	96	106	110·4	84	127	207	67	455	245	106	259	368
94	123	76 4	45	41	91·1	90	98	108·8	80	126	209	66	454	241	117	232	381
102	132	77·2	49	37	75·5	101	108	106·9	91	120	212	66	468	250	114	243	349
98	130	75 3	45	40	88·8	96	106	110·4	92	129	215	70	465	243	112	250	404
107	130	82·3	49	37	75·5	97	104	107·2	85	135	226	66	498	262	116	279	408
111	135	82·2	53	44	83·0	105	116	110·4	90	130	233	69	505	267	112	275	403
104	131	79·3	50	34	68·0	94	110	116·9	100	147	217	57	470	250	118	255	374
88	123	71·5	44	40	90·9	85	100	117·6	94	134	210	63	428	226	101	224	346
100	132	75·7	48	38	79 1	97	106	109·2	84	140	218	68	469	223	105	238	392
99	131	75·5	50	35	70·0	98	112	114·2	87	134	223	65	451	246	111	258	386
97	125	77·6	49	38	77·5	93	100	107·5	87	121	213	63	437	229	105	240	369
109	133	81·9	51	36	70·5	99	100	111 1	100	120	231	62	518	279	115	260	407
101·0	128·3	78·7	45·9	38·5	83·8	97·6	108·8	111·4	92·0	131·4	217·5	65·9	459·9	245·9	110·4	260·6	385·2

Measurements of 22 Moormen

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Serial number.	Name.	Caste.	Sub-caste, or sub-tribe endogamous.	Section, or sept exogamous.	District of birth.	Age.	Measurement round chest.	Measurement with extended arms.	Height.	Height sitting.	Height kneeling.	Height lower end of gladiolus.	Weight in pounds.	Cephalic length.	Cephalic breadth.	Cephalic index.
1	Aboobaker Sultan.	Moor ...	...	...	Colombo ...	35	870	1750	1660	864	1232	1216	...	191	148	77·4
2	Miski ...	do.	...	...	do	27	850	1726	1640	824	1202	1214	...	177	131	74·0
3	Mooralam ...	do.	...	...	do.	30	730	1544	1549	794	1200	1132	..	181	149	82·3
4	Shaikh Mamu	do.	..	...	Tanjore ... S. India.	25	770	1656	1616	770	1178	1244	...	176	142	80·6
5	Takir ...	do.	...	...	Colombo ...	28	820	1712	1610	786	1162	1224	...	191	138	72·2
6	Shaikh Jum	do.	...	...	do.	25	770	1754	1660	830	1220	1244	...	181	146	80·6
7	Shaikh Katoum	do.	...	...	Tinnevally ... S India.	35	850	1852	1724	806	1246	1320	...	176	145	82·3
8	Sinon ...	do.	...	...	Colombo ...	26	770	1642	1604	720	1182	1210	...	181	149	82·3
9	Mandi Nayna	do.	...	...	Kalapore .. S. India.	25	830	1720	1642	854	1236	1236	...	188	140	74·4
10	Muhamad ...	do.	...	...	Colombo ...	25	790	1720	1680	850	1236	1250	...	182	142	78·0
11	Nather Shaheb.	do.	...	...	Salam ... S India.	40	840	1612	1584	320	1188	1182	...	184	143	77·7
12	Marasa ...	do.	...	...	Colombo ...	25	880	1736	1690	850	1232	1280	...	183	143	78·1
13	Adumi ...	do.	...	...	do.	25	770	1726	1674	816	1220	1264	...	176	140	79·5
14	Hydèr Hosain	do.	...	...	Malabar ... S India.	35	840	1663	1580	804	1552	1170	...	193	133	68·9
15	Cuhi ...	do.	...	...	Colombo ...	26	800	1712	1694	842	1206	1222	...	177	142	80·2
16	Salema Cebe	do.	...	...	do.	25	720	1630	1574	790	1162	1182	...	178	144	80·8
17	Hosaini ...	do.	...	...	do.	30	880	1806	1684	846	1236	1284	...	193	150	77·7
18	Kasim ...	do.	...	...	do.	30	840	1654	1592	821	1178	1184	...	169	140	82·8
19	Saidahamid...	do.	...	...	Tundi ... S. India.	35	860	1692	1550	812	1182	1196	...	186	150	80·6
20	Fakir ...	do.	...	...	Colombo ...	25	800	1650	1581	794	1153	1192	...	173	155	89·5
21	Abdool ...	do.	...	...	do.	26	860	1800	1752	874	1278	1306	...	182	153	83·6
22	Asonlobe ...	do.	...	...	Molialim ... S. India.	40	850	1622	1510	782	1134	1112	...	180	147	81·6
					Average ...		817·7	1699	1625	815·8	1200·6	1221	...	182·0	144	79·1

taken in Ceylon in November 1892.

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Bi-maxillary or bi-goniac breadth.	Maximum bi-zygomatic breadth.	Maxillary-zygomatic index.	Nasal height.	Nasal width.	Nasal index.	Bimalar breadth.	Naso-malar breadth.	Naso-malar index.	Height from vertex to intersuperciliary point.	Height from vertex to tergus.	Height from vertex to chin.	Facial angle.	Length of fore-arm.	Length of left foot.	Length of middle fing of left hand.	Maximum breadth of hips.	Maximum breadth of shoulders.
106	137	77·3	48	42	87·5	108	116	107·4	86	127	220	66	468	261	118	267	408
102	139	73·3	48	40	83·3	99	110	111·1	87	128	226	58	465	258	115	259	404
95	130	73·0	49	41	83·6	100	110	110·0	89	119	207	67	425	236	106	237	353
105	123	85·3	50	38	93·4	95	106	110·5	97	133	227	64	446	240	107	244	363
98	125	78·4	50	42	84·0	97	114	117·5	80	129	211	67	460	247	114	248	398
110	140	78·5	47	33	70·2	111	124	111·7	94	124	217	69	462	256	113	255	394
110	130	84·6	46	36	78·2	98	106	108·1	92	123	222	66	493	269	115	270	415
103	131	78·6	52	41	78·8	98	108	110·2	85	134	208	66	447	245	110	244	385
101	133	75·9	49	38	77·5	102	120	117·6	95	137	223	67	460	250	113	250	393
95	124	76·6	48	42	87·5	102	114	111·7	100	140	232	68	465	250	115	224	383
110	136	80·8	43	41	95·3	94	100	106·3	91	139	214	63	444	235	107	262	372
107	138	77·5	43	37	77·0	105	112	106·6	97	124	219	66	463	257	115	258	400
99	123	80·4	51	36	70·5	94	104	110·6	98	135	220	70	480	267	108	240	373
97	123	78·8	45	36	80·0	91	106	116·4	94	134	221	71	440	232	102	260	384
93	123	75·6	50	31	62·0	97	114	117·5	76	123	202	69	454	243	103	257	393
102	130	78·4	50	40	80·0	99	110	111·1	79	142	217	61	430	237	100	237	359
101	135	74·8	50	40	80·0	98	106	108·1	84	118	219	71	478	261	117	260	416
98	124	79·0	47	36	76·5	92	104	113·0	95	118	210	65	443	233	100	246	384
102	133	76·6	47	40	85·1	98	114	116·3	85	137	220	68	437	236	106	243	380
93	131	70·9	42	39	92·8	94	104	110·6	84	139	219	66	453	246	109	232	363
105	137	76·6	51	39	86·6	100	108	108·0	91	135	222	62	475	249	110	259	400
107	131	81·6	50	40	80·0	96	110	114·5	80	127	203	67	437	231	105	257	380
101·7	136·7	74·3	47·7	38·5	80·7	98·5	110	111·6	89·0	130·2	217·2	64·4	455·6	247·2	109·4	250·4	386·5

1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	16	17
Serial number.	Name.	Caste.	Sub-caste, or sub-tribe endogamous.	Section, or sept exogamous.	District of birth.	Age.	Measurement round chest.	Measurement with extended arms.	Height.	Height sitting.	Height kneeling.	Height lower end of gladiolus.	Weight in pounds.	Cephalic length.	Cephalic breadth.	Cephalic index.
1	Tegisapuhani	Goigomá		A	Colombo ...	45	820	1710	1667	880	1230	1220	...	185	148	80·0
2	Jusiapu ..	Káráve		B	Panadu ...	28	780	1620	1574	823	1165	1185	...	184	144	78·2
3	Adrian ...	Goigomá		C	Matra ...	30	850	1680	1661	886	1240	1240	...	191	145	75·9
4	Jakolis ...	do.		D	Colombo ...	30	850	1800	1710	873	1260	1270	...	185	143	77·2
5	Eliasappu ...	do.			do.	25	850	1740	1675	865	1228	1310	...	197	133	68·5
6	Charles ...	Nakati			Galle ...	28	810	1730	1668	870	1233	1300	...	183	145	79·2
7	Abranguapu	Goigomá		E	Colombo ...	42	850	1660	1620	869	1195	1220	...	183	140	76·5
8	Piris ...	do.			Abisawella ...	30	870	1790	1681	885	1850	1248	...	202	142	70·2
9	Somaranark	do.			Galle ...	42	800	1540	1595	857	1183	1190	...	179	152	84·9
10	Jonapu ...	do.		F	Colombo ...	25	820	1680	1660	845	1220	1240	...	173	150	86·7
11	Netorisa ...	Nakati		G	Tangal ...	28	810	1710	1713	890	1235	1290	...	171	136	79·5
12	Abiashami ...	Goigomá			Matara ...	35	770	1810	1709	844	1250	1270	...	178	145	81·4
13	Andris ...	do.		H	do.	35	800	1650	1591	845	1178	1190	...	183	148	80·8
14	Kirinaidé ...	do.		I	Colombo ...	35	825	1745	1700	844	1244	1255	...	187	146	79·1
15	Pudisinh ...	do.		J	do.	30	800	1600	1528	798	1146	1130	...	171	142	83·0
16	Seodoris ...	Radhare		K	Galle ...	25	760	1630	1610	806	1186	1198	...	182	150	82·4
17	Karalisano ...	Nowandan		L	Colombo ...	30	815	1678	1616	780	1180	1194	...	193	142	73·5
18	Batapu ...	Goigomá		M	do.	40	790	1712	1640	836	1200	1220	...	179	140	78·2
19	Devi ...	do.		N	do	30	875	1816	1712	896	1272	1254	...	185	153	82·7
20	Tonisapu ...	Alagamá		O	do	30	740	1658	1570	770	1154	1164	...	177	151	85·0
21	Sangalilam	Goigomá		P	do.	35	865	1770	1710	886	1276	1244	...	197	144	73·0
22	Konesperis...	do			Ravanagar ...	32	830	1690	1576	772	1170	1170	...	191	139	72·9
23	Publish ...	do.			Colombo ...	25	785	1604	1563	800	1174	1122	...	182	138	75·8
24	Patusinh ...	do.		Q	do.	30	815	1748	1712	835	1268	1296	...	192	148	77·0
25	Indikapu ...	do.		D	do.	45	820	1608	1686	802	1160	1148	...	183	141	77·0
26	Antonis ...	Julam		R	do.	26	770	1700	1578	780	1170	1162	...	185	145	78 3
27	Aglis ...	Radhare		S	do.	30	790	1692	1604	803	1192	1221	...	176	147	83·5
28	Bhaudra ...	Goigomá		T	Kandy ...	25	790	1630	1624	840	1200	1223	...	196	146	75·0
29	Hemdikapu	do.		U	Colombo ...	30	780	1686	1583	780	1146	1164	...	180	134	74·4

Velátnárachigé. B Pálamándádige. C Senáráyekge. D Veerasingara.
I Lamanaidilagé. J Bolalisinhalegé. K Jairatmagé. L Indrabarágé.
Q Wanepu kangergé. R Tamolegé. S Khoratholegé. T Disanegé.

taken in Ceylon in November 1892.

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Bi-maxillary or bi-goniac breadth.	Maximum bi-zygomatic breadth.	Maxillary-zygomatic index.	Nasal height.	Nasal width.	Nasal index.	Binalar breadth.	Naso-malar breadth.	Naso-malar index.	Height from vertex to intersuperciliary point.	Height from vertex to tragus.	Height from vertex to chin.	Facial angle.	Length of fore-arm.	Length of left foot.	Length of middle finger of left hand.	Maximum breadth of hips.	Maximum breadth of shoulders.
112	137	81·7	50	41	82·0	105	116	110·4	92	138	223	63	464	258	111	289	412
98	133	73·6	51	41	80·3	103	118	114·7	90	137	218	65	435	252	107	263	368
107	137	78·1	49	42	85·7	105	114	108·5	90	126	221	70	450	260	111	260	408
106	140	75·7	47	36	76·5	107	120	112·1	86	129	219	67	481	245	113	274	400
92	128	71·8	48	37	77·0	103	118	114·5	108	130	227	69	474	260	115	258	390
102	135	75·5	48	46	95·8	109	124	113·7	110	134	245	64	461	250	112	277	408
103	125	82·4	45	45	100	107	122	114·0	100	139	225	68	458	250	111	281	392
106	136	77·9	51	39	76·4	115	136	117·3	90	145	240	61	494	270	123	274	423
97	129	75·1	45	37	82·2	110	118	116·3	110	147	228	70	417	235	102	252	345
96	125	76·8	43	34	79·0	103	120	116·5	101	135	224	68	461	242	106	250	385
101	128	78·9	46	39	84·7	105	122	116·1	100	132	229	62	463	262	106	275	393
103	131	78 6	47	43	91·4	112	128	114 2	97	140	245	66	493	271	120	283	400
95	136	69·8	48	40	83 3	119	130	109·2	92	139	231	70	440	237	108	277	402
90	132	68·1	49	37	75·5	110	128	116·3	101	137	233	70	476	253	104	266	382
103	122	84·4	45	39	86·6	91	104	114·2	88	126	206	61	435	204	106	242	385
112	128	87·5	50	40	80·0	97	110	113·4	83	128	218	64	445	249	108	242	365
92	128	74·2	48	40	83 3	98	110	112·2	80	127	209	70	448	253	106	255	392
104	128	81·2	49	38	77·5	96	112	116·6	89	130	214	65	466	256	112	274	389
97	132	73·4	50	44	88 0	98	114	116·3	83	137	221	67	471	258	115	287	460
98	126	77·7	44	41	93·1	93	106	113·9	93	135	222	66	484	240	114	251	354
102	132	77·2	44	43	97·7	98	108	110·2	101	140	232	65	482	272	115	270	408
100	128	78·1	41	47	114·8	103	114	110·6	89	127	213	59	462	252	113	257	375
106	129	82·1	45	40	88·8	101	114	112·8	86	130	218	65	436	250	105	237	344
107	133	80·4	49	40	81·6	100	116	116·0	96	138	232	69	480	271	115	258	405
92	126	73·0	46	43	93·4	94	106	106·3	87	131	218	65	439	229	101	237	377
98	131	74·8	50	42	84·0	102	108	105·8	79	130	221	68	456	252	114	234	372
102	127	80 3	42	35	83·3	102	116	113·7	92	136	198	71	406	247	111	225	374
106	134	79·1	51	38	74·5	102	112	109·8	94	135	212	59	442	240	108	244	390
93	126	73·8	51	40	78·4	93	102	109·6	105	124	227	63	455	235	109	236	361

E Mankotakaukanamagé. F Wariapperunagé. G Nehuluagolalomlogé. H Koodagamagé.
M Waligomagé. N Eknaikegé. O Kaliperamagé. P Bisampereragé.
U Joygodiarachegé.

Measurements of 56 Singales

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Serial number.	Name.	Caste.	Sub-caste, or sub-tribe endogamous.	Section, or sept exogamous.	District of birth.	Age.	Measurement round chest.	Measurement with extended arms.	Height.	Height sitting.	Height kneeling.	Height lower end of gladiolus.	Weight in pounds.	Cephalic length.	Cephalic breadth.	Cephalic index.
30	Charles ...	Goigomá		A	Galle ...	28	790	1741	1640	822	1212	1203	...	186	143	76·8
31	Karole ...	do.		B	do.	30	860	1726	1633	824	1208	1204	...	187	139	74·3
32	Juanith ...	do.			Colombo ...	45	830	1746	1624	704	1194	1222	...	186	142	76·
33	Mesti Gohem	Fishere			do.	40	780	1498	1538	824	1162	1152	...	178	145	81·4
34	Handi ...	Goigomá		C	Galle ...	25	800	1726	1642	834	1210	1232	...	187	155	82 8
35	Tinapu ...	do.			Colombo ...	45	740	1616	1530	784	1114	1082	...	183	145	79·2
36	Haramans ...	do.			Panadora ...	25	760	1680	1672	770	1132	1176	...	176	146	82·9
37	Peris ...	do.			Colombo ...	28	770	1690	1594	834	1184	1170	...	178	143	80·3
38	Habrilapu ...	do.		D	do.	30	720	1576	1546	782	1136	1146	...	172	140	81·3
39	Joanisam ...	Achare		E	do.	30	730	1710	1636	784	1192	1254	...	186	135	72·5
40	Josaf ...	Kara		F	do.	28	840	1750	1636	766	1180	1226	...	176	139	78·9
41	Kaloo Hami	Goigomá		G	Ratnapura ...	25	830	1654	1570	764	1154	1142	...	193	150	77·7
	Janus ...	Kara		H	Colombo ...	30	760	1684	1562	788	1132	1184	...	186	143	76·8
43	Panchu Mahatma. ...	Goigomá		I	Sapragoma ...	35	860	1750	1730	816	1260	1326	...	188	136	72·3
44	Lakobhanda	do.		J	do.	30	720	1692	1653	830	1210	1223	...	179	142	79·3
45	Arnulusapro	do.		K	Colombo ...	35	850	1700	1720	890	1254	1244	...	181	147	81·2
46	Pererah ...	do.		L	do.	30	740	1694	1614	843	1194	1213	...	187	140	74·8
	Jong ...	Halagama			do.	25	820	1640	1499	804	1124	1186	...	184	140	76·0
48	Leonis ...	Goigomá			do.	32	855	1786	1692	834	1230	1254	...	181	150	82·8
49	Harmanis ...	Kara			do.	32	840	1726	1640	840	1190	1196	...	185	142	76·7
50	Harmanis ...	Halagama			do.	40	760	1620	1616	832	1192	1210	...	178	154	865
51	Bramha ...	Goigomá		M	do.	35	800	1690	1572	804	1174	1160	...	186	151	81·1
52	Siapu ...	do.		N	do.	30	775	1610	1574	774	1130	1180	...	181	135	74·5
53	Arolese ...	Duráé			do.	25	805	1574	1548	816	1162	1142	...	180	141	78·3
54	Jonasapu ...	Goigomá		O	do.	30	820	1600	1548	832	1200	1186	...	186	146	78 4
55	Salu ...	Salo		P	do.	35	835	1710	1660	820	1220	1236	...	183	146	79·7
56	Andris ...	Goigomá		Q	do.	30	770	1610	1530	782	1150	1142	. .	177	143	80·7
					Average ...		803·3	1683·6	1662·4	815·1	1205·4	1207·6	...	183·5	143·8	78·3

A Bikramakankage. B Mahatigama Acheregé. C Jotinondagé. D Muninarachege.
I Minikangé. J Bodhinaik—Dharmaalaukargé. K Thoodoobhitanege. L Fedibiacharegé.
Q Lokutetigé.

taken in Ceylon in November 1892.

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Bi-maxilliary or bi-goniac breadth.	Maximum bi-zygomatic breadth.	Maxilliary-zygomatic index	Nasal height.	Nasal width.	Nasal index.	Bimalar breadth.	Naso-malar breadth.	Naso-malar index.	Height from vertex to intersupercilliary point.	Height from vertex to tragus.	Height from vertex to chin.	Facial angle.	Length of fore-arm.	Length of left foot.	Length of middle finger of left hand.	Maximum breadth of hips.	Maximum breadth of shoulders.
112	134	83·5	51	41	80·3	95	110	115·7	95	122	230	65	471	257	113	234	395
105	131	80·1	45	34	77·5	94	100	116·9	84	130	212	66	464	252	108	258	409
101	127	79·5	50	34	68·0	100	114	114·0	110	133	232	66	472	257	110	269	385
100	126	79·3	46	40	86·9	97	104	107·2	92	134	215	67	393	222	99	246	360
102	136	75·0	43	40	93·0	101	114	112·8	100	140	237	69	458	261	117	230	380
100	123	81·3	47	40	85·1	90	100	111·1	100	136	225	66	442	237	106	247	373
101	124	81·4	50	36	72·0	93	108	116·1	82	128	210	67	463	241	108	242	356
91	122	74·5	46	34	73·9	92	104	117·3	90	129	214	67	430	250	106	240	378
100	124	80·6	52	37	71·1	91	102	111·9	88	140	220	66	422	242	99	241	350
90	126	71·4	51	37	72·5	95	108	113·6	73	128	211	67	452	237	104	232	371
103	135	76·2	50	39	78·0	100	108	108 0	100	121	221	68	480	262	117	270	357
103	133	77·4	44	40	90·9	100	114	114·0	104	140	230	71	445	254	111	264	394
102	131	77·8	42	37	88·0	94	108	114·8	81	133	207	75	450	240	112	249	380
102	130	74·8	52	40	76·9	95	110	115·7	93	125	222	64	484	264	111	243	395
110	140	84·2	52	41	78·8	107	122	114 0	70	107	206	66	451	257	114	240	380
93	129	72·0	51	37	72·5	94	108	114·8	98	123	227	71	447	256	107	248	379
100	130	76·9	52	40	76·9	93	108	116·1	83	133	218	71	436	245	101	240	384
98	126	77·7	46	36	78·2	91	102	112·0	85	142	207	70	452	253	110	247	362
105	136	77·2	49	41	83·6	95	108	113·6	75	135	214	68	477	266	124	241	392
110	128	85·9	49	39	79·5	102	110	107·8	76	127	218	62	463	247	111	245	376
105	130	80·7	47	39	82·9	95	104	109·4	85	134	218	66	445	233	114	224	352
103	136	75·7	47	42	89·3	101	116	114·8	89	130	226	70	432	238	104	246	385
94	126	78·3	48	40	83·3	90	100	111·1	79	127	208	66	452	234	108	253	351
95	122	77·8	44	36	75·0	93	102	109·6	84	128	211	68	427	227	105	238	386
105	132	79·5	49	41	83·6	100	112	112·0	86	134	223	71	467	242	106	262	395
100	124	78·7	50	39	78 0	100	118	118·0	88	139	212	69	456	249	120	258	379
94	132	71·2	41	40	97·5	98	112	114·2	88	129	203	68	436	231	112	240	360
100·7	129·6	77·7	47·6	39·4	82·7	99·5	112·5	113·0	90·8	132·3	220·4	66·7	454·5	248·3	109·9	253.1	377 1

E Kepitagoleacherigé. F Wandaothadoogé. G Koshpatabatege. H Armandahevagé.
M Gange. N Eloatige. O Lunaracheregé. P Mangoregé.

Form I.

Measurements of 7 members of the Nagar Tribe

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Serial number.	Name.	Tribe.	Sub-caste, or sub-tribe endogamous.	Section, or sept exogamous.	District of birth.	Age.	Measurement round chest.	Measurement with extended arms.	Height.	Height sitting.	Height kneeling.	Height lower end of gladiolous.	Weight in pounds.	Cephalic length.	Cephalic breadth	Cephalic index.
1	Raja Sihandar Khan.	Nagar ...	...	...	Nagar ..	27	...	...	1640	..	...	...	...	180	142	78·8
2	Raja Khusru Khan.	do.	...	...	do	17	...	...	1634	...	...	...	...	185	144	77·8
3	Sultanali ...	do.	...	...	do.	23	...	...	1670	...	...	...	...	194	151	77·8
4	Mirzabeg ...	do.	...	..	do.	30	...	...	1690	...	...	...	...	190	142	74·7
5	Kasir ...	do.	...	...	do.	38	...	...	1652	...	...	...	...	198	142	71·7
6	Abdul Hosain	do.	...	..	do.	29	...	...	1646	...	...	...	...	191	143	74·8
7	Ahmadali ...	do.	...	...	do.	28	...	...	1606	...	...	...	...	197	143	72·5
					Average ...	.....	.....	.....	1648·2	.....	.....	.....	.....	190·7	143·8	75·4

Measurements of 9 members of the Hanza Tribe

1	Mahamed Reza	Hanza ...	...	...	Hanza ..	30	..	...	1750	...	...	...	...	200	165	82·5
2	Afiyat Khan...	do.	...	...	do.	22	...	...	1684	...	...	...	...	188	144	76·5
3	Sultan Mahomed.	do.	...	...	do.	37	...	...	1696	...	...	...	...	189	156	82·5
4	Zarvara Khan	do.	...	...	do.	52	...	...	1766	...	..	...	...	195	148	75·8
5	Darvesh ...	do.	...	...	do.	39	...	...	1648	...	...	...	...	195	151	77·4
6	Abdul ...	do.	...	...	do.	30	...	...	1800	...	...	...	...	200	156	78·0
7	Mahomed Ali	do.	..	...	do.	43	...	...	1674	...	...	...	...	181	152	83·9
8	Nazir Sha ...	do.	...	...	do.	36	...	...	1708	...	...	...	...	197	150	76·1
9	Abdu Faiz ...	do.	..	...	do.	30	...	...	1654	...	...	...	...	191	146	76·4
					Average ...	.....	.....	.....	1708·8	.....	.....	.....	.....	192·8	152·0	78·8

Measurements of 6 members of the Kafir Tribe

1	Chara ...	Kafir...	...	...	Baskal Valley ...	30	...	...	1730	...	...	...	...	199	150	75·3
2	Tong ...	do.	...	...	do.	26	...	...	1654	...	..	...	...	191	149	78·0
3	Kam ...	do.	...	...	Presungal Valley	22	...	...	1738	...	...	...	...	193	144	74·6
4	Kon ...	do.	...	...	Baskal Valley...	28	...	...	1686	...	...	...	...	194	160	82·4
5	Teuk ...	do.	...	...	Chitral Border	19	...	...	1660	...	...	...	...	196	152	77·5
6	Astaula ...	do.	...	...	Utsum Valley...	14	...	...	1560	...	...	...	...	195	143	73·3
					Average ...	.....	.....	.....	1671·3	.....	.....	.....	.....	194·6	149·6	76·9

taken at Calcutta.

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Minimum frontal breadth.	Maximum bi-zygomatic breadth.	Fronto-zygomatic index.	Nasal height.	Nasal width.	Nasal index.	Bimalar breadth.	Naso-Malar breadth.	Naso-malar index.	Height from vertex to intersuperciliary point.	Height from vertex to tragus.	Height from vertex to chin.	Facial angle.	Length of fore-arm.	Length of left foot.	Length of middle finger of left hand.	Maximum breadth of hips.
102	133	76·6	58	37	63·7	107	122	114·2	...	...	...	69	...	...	...	...
107	135	79·2	60	39	65·0	111	120	108·1	...	...	...	69	...	...	...	...
105	134	78·3	59	38	64·4	103	118	114·5	..	...	...	70	...	...	...	...
106	135	78·5	58	35	60·3	98	122	124·4	...	...	...	72	...	...	...	...
100	127	78·7	64	35	54·6	101	116	114·8	...	...	...	66	...	...	...	...
109	134	74·6	58	40	68·9	98	106	108·1	..	...	...	66	...	...	...	...
110	132	83·3	52	35	67·3	103	114	110·6	...	...	...	68	...	...	...	...
104·2	132·8	78·4	58·4	37·0	63·3	10·3	116·8	118·3	.....	.....	.....	68·5	.....	.....	.....	.....

taken at Calcutta.

113	144	78·4	62	40	64·5	114	136	119·2	...	..	...	76	...	...	...	...
100	131	76·3	53	38	71·6	105	122	116·1	...	...	...	63	...	...	...	...
105	142	73·9	55	40	72·7	111	128	115·3	...	...	...	65	...	...	...	...
111	144	77·0	54	38	70·3	112	130	116·0	...	...	...	71	...	...	...	...
111	144	77·0	51	38	74·5	104	118	113·4	...	...	...	72	...	...	...	...
116	145	80·0	52	40	76·9	111	124	112·6	...	...	...	68	...	...	...	...
109	138	78·9	52	37	71·1	110	122	110·9	...	...	...	62	...	...	...	...
104	135	77·0	50	37	74·0	110	120	109·0	...	...	...	67	...	...	...	...
105	136	77·2	50	39	78·0	104	114	109·6	...	...	...	77	...	...	...	...
108·2	139·8	77·3	53·2	38·5	72·3	109	123·7	113·4	.....	.....	.....	69	.....	.....	.....	.....

taken at Calcutta.

111	141	78·7	53	37	69·8	110	130	118·1	...	...	...	71	...	...	...	...
106	135	78·5	53	37	69·8	105	124	118·0	...	...	...	71	...	...	...	...
108	137	78·8	54	39	72·2	109	128	117·4	...	...	...	70	...	...	...	...
111	144	77·0	58	37	63·7	101	116	114·8	...	...	...	70	...	...	...	...
110	141	78·0	55	38	69·0	108	122	112·9	...	...	...	65	...	...	...	...
107	129	82·9	52	36	69·2	109	126	115·5	...	...	...	66	...	...	...	...
108·8	137·8	78·9	54·1	37·3	68·9	107·0	124·3	116·1	.....	.....	.....	68·8	.....	.....	.....	.....

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Modern Customs among the Bedouins of the Ḥaurán, edited and translated by COLONEL H. S. JARRETT.

INTRODUCTION.

The following monograph in Arabic, treating of the customs of the Bedouin tribes that visit the Ḥaurán, or dwell there during a great part of the year, was sent to the Asiatic Society by the distinguished author of 'Arabia Deserta,' Mr. C. M. Doughty, from Italy in the spring of last year. The letter accompanying the communication thus explains the origin and expresses the interesting character of the manuscript illustrative of customs of which details so circumstantial and exact are rarely within the opportunities of ordinary travellers to observe.

Villa Meylia, San Remo.

I have procured that a Lebanon Arabic school teacher, who was many years stationed in the Ḥaurán, beyond Jordan, and who in that time was much with the nomad tribesmen, should write an account from his own observation of the customs of those Bedawin, and from his own (Syrian) point of view. He knows no other than the Arabic language. The result is a manuscript of about 40 pages in Arabic, which I should think will be found of considerable interest, especially if the text be printed with a translation. I consulted Professor Sprenger as to publishing it (he has not seen it). He responded it might be best to put myself in communication with you, as you have the means of publishing the original, and it might form an article in your *Journal*. I offer it therefore for your acceptance.

I am, dear Sir, Yours sincerely,

CHAS. M. DOUGHTY.

8th April, 1892.

However honourable to the writer of this lively sketch may be the industry and powers of observation it displays, its style and accuracy in point of language are scarcely creditable to the *schoolmaster.* Gray, writing to Horace Walpole regarding Boswell's *Journal of a Tour to Corsica*, which had not long before been published says: 'The pamphlet proves what I have always maintained, that any fool may write a most valuable book by chance, if he will only tell us what he heard and saw with veracity." This opinion toned down in the politer phraseology in which Walpole subsequently expressed it, cannot fairly be resented by any writer to whom it may be applied. 'Mr. Gray, the poet has often observed to me, that if any person were to form a book of what he had seen and heard, it must, in whatever hands, prove a most useful and entertaining one." As there is no reason to doubt the veracity of the following narrative, its value as a description of modern life among a historic race, lingering for centuries on the fringe of civilization yet untouched by it and still associated with the romance of desert chivalry, should need no literary ability to recommend it. This it certainly does not possess. As will be seen from the numerous foot-notes to the text, the solecisms are frequent and though the constant repetitions of phrase, wearisome without lucidity, savour of the school-room, the gross deviations from grammatical rules suggest that the educational staff of the province is itself in need of the training it professes to supply. This fault is, however, common, as Palgrave tells us, at the present day not only in Ḥijáz and Yemen, but more marked in Egypt and Syria, and most at Baghdad and Mauṣil, where the current speech is defective, clipped and corrupted in desinence, accent and phraseology. This is not due to dialectic change but to absolute degeneracy in form and character, noticeable in the meagre and artificial elocution of even those sufficiently educated to avoid the low provincialisms and errors of the illiterate. As a contrast to this base and degraded speech, he notices the pure well of Arabic undefiled that pours spontaneously from the lips of ragged urchins throughout Jabal Shomer and in the uplands of the Nejd country, as correct in expression as any rhythmical challenge of war or dirge of grief chanted in the desert in the Time of Ignorance. It is not to be expected that the language of Shanfara and Nábigha, of Imrul' Ḳais and Labíd, of men whose verse and ordinary speech were identical in substance if not in form, and who 'lisped in numbers, for the numbers came,' is to be found even among the Bedouins of the Decapolis, much less in the mouths of Syrian pedagogues of the Lebanon. Not a single instance, observes Lane, is said to be known of any individual's having acquired a perfect knowledge

of the grammar of classical Arabic, otherwise than by being bred among those who preserved it uncorrupt. Muḥammad himself was sent to the desert to be nursed by the tribe of Saad Ibn Bekr Ibn Hawázin, descendants of Muḍar though not in the direct line of the Ḳuraysh, and from this teaching he claimed to be the most chaste among the Arabs in speech. Even the famous lexicologist, Al Aṣmai, and the equally famous grammarian his contemporary, Síbawaih, were reckoned by some purists to have erred in grammar. This classical language of Maad or Muḍar, as it is termed by the Arabs, is said to linger in some remote parts of Arabia. One of these is held to be Akád, near Zebíd on the western sea-board of El Yemen, the people of which suffer no stranger to remain with them more than three days, the prescribed legal period of hospitality, for fear of the corruption of their speech. The writer of this account has evidently not visited this fortunate spot even within the tolerated limits of a traveller's sojourn, but though his language fails to attain even the ordinary level of journalistic writing and its interest lies exclusively in its subject, there is nevertheless, in spite of grammatical defects, a simplicity of narrative which recommends it as the evidence of a straight-forward, unaffected, though not very intelligent eye-witness. Whether he has correctly quoted the two specimens of verse sung by the girls at the marriage-festivities is perhaps doubtful, and it would have been more to the utility of his description had he explained the meaning of the first of these which is much in need of a gloss. Its metre appears to be a rude form of *hazaj*, depending more upon accent than prosodial rule, resembling in its character the class of ballad first in vogue among the Umayyads of Spain about the ninth century, of which specimens are given by Ibn Khaldún in his Prolegomena. The province of Ḥaurán, situate on the frontiers of Iráḳ and Syria, is expressly mentioned by him as occupied by nomad Arabs who had roamed over its plains and continued to encamp there even in his day and who apparently still make it their annual pasturage. The province has given its name to the poems, or *Ḳaṣídas* composed by the Eastern Arabs which commonly begin with the name of the writer and pass on to the praise of the poet's mistress. These poems were termed *Badáwíyah* or Bedouin, and *Ḥauráníyah* or of Ḥaurán, and *Ḳaisíyah* after the tribe of Ḳais ordinarily dwelling in that country. They were chanted to some simple airs which paid little regard to the canons of harmony and were known as *Ḥauráníyah*. The Western Arabs styled this class of poems *Aṣmaíát* after Aṣmai, the celebrated philologer and collector of the *disjecta membra poetarum*, who was a complete master of the idiom of the desert Arabs, and a living treasury of their verse, and who was said to have known by heart sixteen

thousand verses in the metre of *rajaz* alone. Ibn Khaldún has furnished us with an example of a poem of the Ḥauráni Bedouins composed by a woman whose husband had been assassinated, and who had sent this appeal through the tribe of Ḳais urging them to vengeance. It is written in the measure of *Ṭawíl* and follows, at a very long distance, the style of the ancient models. Such specimens, he observes, abound among the Bedouins and are transmitted as records of poetic distinction. Though some tribes affect this class of composition, he adds, it is disdained by others, such as those of Riyáḥ and Zughbah of the Bani Hilál and by the great tribe of Sulaym.

In my notes to the translation I have avoided any comment beyond a strict elucidation of the text, and I do not think it necessary to enter here into any general disquisition on the history or ethnography of the Bedouins. Such a course would be beyond the scope of this introduction to a writer who is the teller of his own tale which, as his personal testimony, is the only reason for its publication in this journal.

I have to express my acknowledgments to Mr. Rizḳu 'llah Ażzún the Professor of Arabic to the Board of Examiners, who has copied out and corrected the MS. for the press and assisted me with the benefit of his experience in determining the form and orthographical value of certain incorrect colloquialisms that occur in the text. The manuscript itself is clearly and neatly written, though the orthography is occasionally as little to the credit of the schoolmaster as his grammar. His deficiencies in this respect shall be concealed in the obscurity of his own language. I trust that his undoubted merits will not be unrecognized in mine.

H. S. Jarrett.

الخطبة

اولاً عند ما ينظر الشاب ابنة توافقه و يقع له ميل عندها يأخذ يتردّد على بيت اهلها و ياكل و يشرب في بعض الاحيان و بعض اوقات يكلفها بغسل رأسه و في تسريحهِ اي تمشيطهِ و يكونان الاثنين احراراً[1] في المعاشرة مع بعضهما بدون ادنى معارضة من اهلهما و انما بكل تلك المدة مع الحرية التامة بين الشاب والشابة يبقون[2] محافظين على حقوق الاداب والشرف و تلك العادة شبيهة بعوائد شعوب متمدنة - ثم بعد ان تقع المحبة في قلوب الاثنين وينظرون[3] بان ذوق الواحد قد وافق الآخر حينئذٍ يطلب الشاب من والده ان يخطب له تلك الابنة عندئذٍ ينهض الوالد بكل همةٍ و يدعو اوجه اوجه[4] عشيرتهِ و يمتطون ظهور خيولهم و يتوجهون الى بيت اب[5] الابنة فعند ما يقبلون على البيت ينتصب صاحب البيت مع من يكون حاضراً من اقاربهِ لملتقى ضيوفهم ويحولونهم عن خيولهم و يفرشون لهم احسن ما يوجد عندهم و على الفَور يحضرون الجلّة اي زبل البقر و بعر الجمال و يضرمون النار في وسط المقعد و يطبخون القهوة و يسكبون الى الضيوف ضمن فناجين في كل فنجان رشفة فقط فعندما ياخذ الفنجان كبيرهم يضعهُ قدامهُ و يقول لأب[6] الابنة لا نشرب قهوتك الّا

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1 و يكون الاثنان حرّين

2 يبقيان

3 وينظران

4 This word is erroneously duplicated.

5 ابي

6 لأبي

24800

وطنتيني[1] وهكذا يفعلون الجميع ارفاقهِ[2] من[3] ثمّ ينظر اليهم صاحب البيت اي أب[4] الابنة او واحد من اوجه عشيرتهِ و يقول لهم اشربوا قهوتكم فيصير على خاطركم — حينئذٍ يمسكون[5] كل واحد فنجانهُ و يشربون و في اثناء ذلك يكون صاحب البيت استحضر[6] على رأس غنم او ماعز ذبيحة و بعد ان يقطعوا اللحم شقفًا نحو نصف اوقية و يسلقوه في اللبن حتى يستوي و يضعونهُ على وجه المنسف من طبيخ البرغل الذي يكون نحو نصف مدّ وليس اقل او نحو خمسة الاف وستمائة درهم و يضعون ذلك المنسف في الوسط امام الضيوف و ياتون بنحو الفين[7] درهم سمن بارد و يضعونهُ على وجه المنسف فوق طبيخ البرغل و اللحم و يأتي الرجل من اقارب صاحب البيت و بيده ابريق ماء بارد و يغسل يد كل رجل من الضيوف غسلاً بسيطًا جدًا و ينظر الرجل صاحب البيت الى الضيوف و يقول افلحوا على الميسور اعني[8] تفضلوا على الزاد فيجيبونهُ لا ناكل من زادك الا تعطينا فاذا كان له ارادة في زيجة ابنتهِ[9] الى ابنهم يقول لهم تفضلوا و كلوا غداكم و كل ما تريدونهُ يجري على خاطركم حينئذٍ يتقدمون على الزاد و ياخذون يأكلون في ايديهم بدون ملاعق و خبز و عندهم عوائد البعض يكمشون قدر ما تحوش يدهم من الطبيخ واللحم لربما ما ينوف[10] عن الستون[11] درهم

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1 تُنطيني for إنطى, تعطيني being a dialectic variety of إعطى in common colloquial use.

2 يفعل جميع رفاقهِ

3 The من better omitted.

4 ابو

5 يمسك

6 إستحضر

7 الفي

8 يعني

9 ابنتهِ

10 ينيف

11 الستين درهما

و يهندسها في يده على هيئة كرة و يردها الى فمه بدون ان يمسها في اليد الثانية و بدون لعوسة بل يكبسها كبسة واحدة في لسانه و يبلعها و بعد ان يشبعوا يمسحون ايادیهم في دفة البيت و من[1] ثمّ يمسحون ما بقي من إثر[2] الزفر في لحاهم و يرجعون بعد ذلک کل واحد الى مقعده و يشربون القهوة مرة ثانية من[3] ثمّ ينظر ابو الخطيب[4] الى ابي الخطيبة[4] و يقول له ابشر اجتک[5] يقول له ابو العريس ماذا تريد حقها يجيب ابو الابنة اريد خمسة عشر الف غرش بعد ذلک ينظر الحاضرون الى ابي العروس کلٌّ بمفرده مبتدئين من الاکبر سنًّا ماذا تفوت اکراما لخـــاطري يجيب ابو العريس اکرامًا لک اترک من حقي الف غرش من[6] ثمّ يخاطبون[7] الثاني بترک تسعمائة غرش و ايضا الثالة[8] يترک له ثمانمائة غرش وهلم جرا حتى يصل الى العادة والقانون الجاري بينهم نحو ستة الاف او سبعة و بعد هذه المحاورة ينهض ابو الخطيب على قدميه واقفًا و ابو الخطيبة کذلک و يلثم کل واحد شوارب الآخر ثم ينهضون واقفين جميع الحـــاضرين من اقارب العريس و العروس و ينظرون الى کلٍّ من ابي العريس و العروس و يقولون لهما مبارک مبارک حاجة العمر ثم يذبحون ذبيحة من کيس الخطيب و يطبخون عليها منسف برغل و يدعون جميع اقارب الابنة لاجل الغدا

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1 Omit. 2 أثر 3 Omit.

4 These two words should be reversed in order to be in harmony with the grammatical construction of the sentence.

5 For جاءتك a not uncommon colloquialism. The *alif* appears superfluous.

6 Omit. 7 يخاطبه 8 الثالث

وبعد هذا ينهضون[1] اهل العريس ويدعون عموم اهل العروس الى وليمة في بيت العريس فيركبون الطرفية من بيت الخطيبة و يذهبون سَويتًا[2] الى بيت الخطيب فيلاقونهم[3] اقارب العريس بكل ترحاب و بشاشة و يعملون لهم اكرام[4] لامزيد عليه و بعض الاغنياء يذبحون جزور[5] بمثل هكذا ظروف لربما ثمنه يكون نحو عشرون[6] ليرة و تبقى تلك الزيارة متبادلة بين الطرفين الى ان يكتب الكتاب بتمام الاقتران ـ

الزيجة

اولاً يرسل اهل العريس خبرًا الى اهل العروس انهُ فى اليوم الفلاني فريد عروسنا و فى اليوم المعيَّن يركب جمهور منهم خيولهم ناقلين الرماح و السيوف و يجهزون نحو عشرة بنات من اقارب العريس او من عشيرتهِ و يلبسون[7] احسن ملبوسهم[8] و يتزينون[9] في حلي من الفضة و من النحاس و يدهنون[10] شعورهم[11] من بول الابا عر اعني بول الجمال وبهذا السبب يصير لون الشعر مسقول[12] يلمع و يحضرون جمال[13] من احسن طروشهم و يلبّسون الجمال اشياء من اثواب حرير احمر واخضر واصفر و على جانبيهِ اي جانبي الجمل يعلقون شراريب مسبولة لحد الارض و يضعون في ظهر كل جمل مرتبة تسع اثنتين من البنات و يسمون تلك المرتبة حصرة و يضعون كل بنتين على جمل و كل جمل يقودهُ رجل فقير يأخذ نحو ستة

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1 ينهض — 2 سويةً — 3 فيلاقيهم — 4 اكرامًا
5 جزورا — 6 عشرين — 7 يلبسن — 8 ملبوسهن — 9 ويتزيّنّ
10 ويدهنّ — 11 شعورهن — 12 مصقولا — 13 جمالا

غروش اجرته و بعد ان عموم الخيالة و الجمال المزينة تصير حاضرة يركبون الرجال ظهور خيولهم و البنات ظهور جمالهم[1] و يسيرون موكب[2] واحد[3] الرجال يلعبون على ظهور الخيل في الرمح و السيف و الواحد يطارد الآخر و البنات في الهوادج على ظهور الجمال يغنون[4] و يزلغطون[5] و غنا البنات على الغالب يكون هكذا

يا لله تبل الشاشي حتى نجوز عيشي
راعينا هودّ على الفور شرب من شخاخ الثور

والرجال لا تزال في الطراد والبنات في الغناء حتى يصلوا الى البيت اي بيت العروس و تاخذ الخيول تلعب قدام بيت العروس مقدار نصف ساعة و بعد ذلك تحوّل الرجال و البنات و يدخلون الى المحل الموجود[6] فيه العروس والبنات و الرجال يقعدون في محلٍّ آخر من[7] ثمّ يحضرون لهم الزاد على حسب عوائدهم اى منسف طبخ و لحم الى الرجال و شرحهُ الى البنات و العروس و بعد ما ياكلون تنهض البنات و ياخذون[8] العروس الى محلٍّ آخر خلآء و يصخنون[9] حلّةً مآء و يغسلون[10] العروس و يلبسونها[11] ملبوس[12] من جوخ وحرير ويأتون[13] في[14] العروس في الغنآء هكذا

ميلي يا بنت الامير عريسك فارس الفرسان

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1 جمالهن
2 موكبا
3 واحدا
4 يغنين
5 و يزغرتن
6 الموجودة
7 Omit.
8 و ياخذن
9 و يسخنّ
10 و يغسلن
11 ويلبسنها
12 ملبوسًا
13 و يأتين
14 بـ

ميلي يا بنت البدو جوزك[1] يذبح العدو
ميلي يا بنت العرب بعلك يقري للضيوف
ميلي يا بنت الموالي عريسك ابو زيد الهلالي

من ثم[2] تركب الرجال ظهور خيولهم و البنات ظهور الهوادج و يركّبون العروس بظهر هودج يكون مزين[3] و مميّز[4] في زينته عن باقي الهوادج و يكون معها ابنة من لزم العريس مثل اخته او ابنة اختهِ او ابنة عمّهِ او ابنة خالهِ او ابنة خالتهِ و يمشون بالخيول و الهوادج موكب[5] واحد[6] الرجال تطارد[7] في ظهور الخيل والبنات تغني[8] في ظهور الهوادج و يسمون هذا الموكب فاردة اي عرسيّة و يبقون على هذه الطريقة الخيول تلعب و البنات تغني[9] حتى يقبلوا على بيت العريس و هناك يعملون ميدان[10] نحو ساعة و البنات تزلغط[11] وهي[12] بظهر الهوادج - و بعد ذلك تحول الرجال والبنات و يدخلون العروس الى بيت احدى[13] الجيران يكون لاقي العروس و عزمها الى بيته و يذبح الخرفان و يطبخ نحو ربع قنطار من البرغل و يملي[14] منسفين كبار[15] و يسكب السمن عليهما بكثرة و يضع منسف[16] قدام الرجال ومنسف[17] قدام العروس و البنات و بعد الفراغ من الاكل يحضر[18] من اقارب العريس و يضع بيده مقدار نصف بشلك قيمة غرش و نصف و يصرخ باعلى صوته خلف الله عليك يا فلان اي انهُ يذكر اسمهُ و يقول عساك تبقى

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1 Metathesis for زوجك
2 بعد
3 مزينا
4 مميزا
5 موكبا
6 واحدا
7 يتطاردون
8 يغنين
9 يغنين
10 ميدانا
11 يزغوتن
12 و هن
13 احد
14 و يملأ
15 كبيرين
16 منسفا
17 منسفا
18 Supply واحد

دائم[1] و هذا[2] نصف ليرة وحينئذٍ يتقدم كل رجل بمفردهِ من الحاضرين و يعطي ذلك الرجل نحو غرش او غرش ونصف و يصرخ بصوت عالي[3] خلف الله عليك يا فلان و هذا[4] ليرة و هكذا يتقدم واحد بعد الآخر على هذه الطريقة حتى لا يبقى ولا واحد ومن[5] ثم يتقدم[6] النساء و البنات ايضا و يدفعون[7] ليد الرجل قليلاً من الدراهم و ياخذ ينادي خلف الله عليك يا فلانة و هذا[8] نصف ليرة و هلم جرا حتى يخلص[9] جميع النساء و البنات و هذه العادة يسمونها نقوط[10] فكل ما يجمعونهُ من الدراهم لا يتجاوز مائة و خمسون[11] غرش[12] فبعد الخلاص من تلك العملية يضع ذلك الرجل الوكيل جميع الدراهم التي يكون جمعها ضمن فوطة و يسلمهم[13] الى العروس و هذه العادة تسمى عندهم شو باش اعني مساعدة الى العريس و غب الخلاص من تلك القضيّة ياخذون ان يجمعوا من الحطب و من الجلّة اى زبل المواشي و يضعون الحطب جميعهُ في وسط مرجة فسيحة و بعد غروب الشمس بنحو ساعة يجتمع الرجال اي العشيرة جميعهم مقلدين[14] في[15] اسلحة من فرودة قديمة محتوية بارود[16] و يشعلون الحطب الموجود في تلك المسحة دفعة واحدة حتى تنظر اللهيب يعلو مقدار خمسة[17] او ستة[18] اذرع و من ثمّ[19] يقف الرجال الحاضرون على هيئة دائرة حول النار و يبتدئون في نغم هَوَلَج هَوَلَج هَوَلَج وهذه اللفظة يكررونها نحو اربعة[20] ساعات لا يزيدون عليها

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1 دائما	2 و هذه	3 عالٍ	4 وهذه
5 Omit.	6 تتقدم	7 و يدفعن	8 وهذه
9 تخلص	10 نقوطا	11 وخمسين	12 غرشا
13 و يسلمها	14 متقلدين	15 بـ	16 بارودا
17 خمس	18 ست	19 Omit.	20 اربع

حرف[1] واحد[2] البتة وتلك الحلقة تكون منظر[3] مبهج[4] جداً لان النار تكـــون كبيرة للغاية و الرجال واقفين حولها رجل بجانب الآخر الكتف على الكتف مقدمين رجل اليمين الى الامام و رجل الشمال الى الوراء شبيه الجنود في مواقع الحرب و يضربون الكفين على بعضهم[5] على طريقة لا يقدر المتفرج ان يميز ان كانت ضربة واحدة او ضربات مختلفة اذ انهم ينـــزلون سوية و يطلعون سوّية و مع عظم عدد الرجال في تلك الحلقة لا يمكنك بان تنظر رجل[6] مقدمة عن رجل قيراط[7] واحد[8] كانهم دارسين[9] الهندسة و بعد انتظام هذه الحلقة يحضرون[10] نحو ثلاثة[11] او اربعة[12] من النساء و البنات من اقارب العريس لا بسين[13] افخر ما عندهم[14] من الثياب و الحلى و الفضة و في يد كل واحدة سيف ويدخلون[15] وسط تلك الدائرة ويبتدئون[16] يرقصون[17] ويلعبون[18] في السيف و يومئون[19] في[20] السيوف على الرجال المؤلّفة منهم تلك الحلقة كمن يريد ان يبطش بسيفه بعدوه فعندها تهيج الرجال كوحش ضاري[21] و يسحبون الفرودة المحشوة بالبارود و يقوصون[22] بين ارجل النساء والبنات الراقصات و يدوم الحال هكذا على هذا المنوال نحو اربعة[23] او خمس ساعات الرجال و النساء و البنات هائجين على بعضهم كجمال او حصن هائجة على بعضها و في اثناء تلك العملية تنظر العرق من اجسام الرجال

حرفا 1	واحدا 2	منظرا 3	مبهجا 4
بعضهما 5	رجلا 6	قيراطا 7	واحدا 8
دارسون 9	يحضر 10	ثلاث 11	اربع 12
لابسات 13	عندهن 14	ويدخلن 15	ويبتدئن 16
يرقصن 17	ويلعبن 18	ويومئن 19	بـ 20
ضارٍ 21	ويقوسون 22		اربع 23

و النساء الراقصات كمرزاب من الماء فبعد ان تحطّ قوتهم من جرى التعب يدخل رجل جليل القدر متقدم في السن الى وسط الحلقة المؤلفة من الرجال و يقول باعلى صوته عليكم جيرة عليكم جيرة يا شباب فعندئذٍ يتركون اللعب و الهيجان و ياخذون راحتهم و عندما[1] الى كفوف بعض الشبان فى اليوم الثاني ترى ان كفوفهم وارمة من عظم الضرب و بعض الاحيان ترى لون كفوفهم ازرق من عظم خبط الكفين على بعضهما و يبقون مدة طويلة لا يقدرون على لمس شئ بايديهم و بعد الانتهاء من تلك المشقة يجلسون على الارض فِرَقًا فِرَقًا و تتقدم[2] لهم القهوة التي تكون معدة لهم و بعد شرب القهوة ينصرفون كل واحدٍ الى بيتهِ من[3] ثمّ فى اليوم الثاني يجتمعون و يأتون الى[4] عند العريس بالغناء و اطلاق البارود و يكون العريس قد استعد على فطور اكرامًا الى الشبان فبعد ان يفرغوا من الاكل و الشرب يرجعون الى الغناء و الرقص النهار بتمامه و بعد ذلك يعملون عزيمة الى العريس فى الدور مقدار سبعة ايام الفطور عند واحد والغداء عند واحد و العشاء عند آخر و بعد السبعة ايام ينتهي الفرح -

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الضيافة

عند ما يقبل الضيف على بيت المعزب ينهض صاحب البيت على قدميه و يغار[5] على الضيف يمسك سرع الفرس و يحول

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1 Supply تنظر 2 وتقدم 3 Omit. 4 Omit.
5 ويغير

الضيف و يربط فرسهُ و بكل سرعة يأتي باحسن ما يوجد عنده من المفروش و يفرشهُ ضمن الربعة قسم من البيت لا تسكنهُ الحريم و على الفور يشعل النار ويحذر [1] القهوة و يعمل بريق [2] قهوة و يقدم الى الضيف من [3] ثم الى الحاضرين و بعد القهوة يحذرون [4] شيء [5] من الزاد لاجل الضيف و بعد ان تأكل الضيوف يقدمون [6] على الزاد الباقي من فضلة الضيوف الحاضرين [7] من اقارب صاحب البيت و عند ما يعزمون صاحب البيت على ان يجلس معهم على الزاد يرفض ذلك و يقول ما يصير المعزّب رباح [8] افلحوا عني [9] تفضلوا فبعد ما ياكلون [10] جميع الحاضرين يتقدم المعزّب و ياكل من فضلة الطعام و في هذه الفطرة [11] تكون ذبحت الذبيحة و بعد وقتٍ و جيز يستحذرون [12] على طبخ البرغل و يسكبونه في منسف من نحاس او من خشب وسعه لا يكون اقل من ذراع و يضعون اللحم على وجه الطبخ قطعًا و يضعوا [13] على جانب المنسف لية الخاروف مع فخض [14] قدام الضيف و يسمون تلك اللحمة الكبيرة شذاة و قبل ان يحذروا [15] الطعام ياتون في [16] الماء لاجل غسل ايادي الضيوف من [17] ثم يضعون الطعام في الوسط و يأتون بالسمن الجامد و يضعونه على وجه المنسف و ينظر المعزب الى الضيف و يقول افلح يا ضيف على الميسور اعني [18] تفضل و يعزم الحاضرين ايضًا من

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1 و يحضر	2 ابريق	3 Omit.	4 يحضرون
5 شيئا	6 يقدم	7 الحاضرون	8 رباحا
9 اي	10 ياكل	11 الفترة	12 يستحضرون
13 و يضعون	14 فخذ	15 يحضروا	16 بـ
17 Omit.			18 يعني

اقاربه فيقدمون و يجلسون دائر المنسف و يبتدئون يدربلون دراييل في الكف اي انهم يكمشون من الطعام في اليد و يسقلونها على هيئة كرة آخذة طول[1] نوعًا و يضع الباهم تحتها و يقدمها الى فمهِ و يكبسها بلسانه و يبلعها بدون ادنى مضغ او لوك و لربما بعض الاحيان تكون دربية البعض نحو ستون[2] درهم[3] فاذا كان الحاضرون في تلك الوليمة جمهورًا لا يسعهم الجلوس على المنسف دفعةً واحدة يبقون منتظرين الى المكان الذي يخلو و كلما[4] فرغ مكان يسدهُ آخر اي كل ما[5] قام واحد ياتي آخر الى مكانهِ و هلمّ جرا حتى ياكلوا الجميع[6] و في اثناء ذلك اي في اثناء الاكل عند ما يخف السمن عن وجه الطعام يزيدونه و في بعض الاحيان تنظر السمن ينسكب مرزاب[7] من كفوف الاكلين و بعد ان يشبعوا جميع الحاضرين يقدم صاحب البيت و ياكل من آخر المنسف الذي لربما يصير قسم من الطعام الباقي و سخا من الايادي التي امتدت اليه و اذا بقي الضيف الى المساء يعطون عليق[8] الى فرسهِ و كذلك تتقدم[9] ذبيحة ثانية على العادة التي تقدم ذكرها و من جملةِ عوائد الضيف و هو على السفرة ياخذ من اللحم و يعطي كلّا من الحاضرين الذين لم يجلسوا على الطعام من اول طورة[10] وايضًا عند ما يقوم واحد من الجالسين على الطعام يقول له المعزّب سدّ يا فلان على هذه الثنية و بعد الخلاص يقول الضيف لصاحب البيت يكثر خير المعزب مخلوفة في الحلال و في كل هذا الوقت عمل

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1 طولا
2 ستين
3 درهما
4 وكلما
5 كلما
6 جميعهم
7 مرزابا
8 عليقا
9 تقدم
10 طور

القهوة لا يبطل بل كل ما[1] خلص بريق[2] يجددون خلافه الى ان يسافر الضيف و في سفر الضيف من بيت معزبه ما زال على ملحة معزبه كلما يحصل لهُ في طريقه من التعدي يقوم المعزب به و انما اذا ضاف في طريقه اخرين واكل من زادهم و بعده حصل له حادث وسُلب يصير حق السوال على المعزب الثاني و يسقط حق المعزب الاول - و حقوق المعزب على سالب ضيفه مرطبطة[3] بقوانين فاذا تصدّف سُلب الضيف باثناء سفره من بيت معزبه يركب المعزب و معه جمهور خيالة من اقاربه و من عشيرته و يذهبون الى الشيخ[4] عشيرة السالب و يقولون له مثلا فلان الفلاني كان ضيفنا في اليوم الفلاني وهو مسافر في الطريق و ملحتنا في بطنه اعني[5] اكل من زادنا و سافر و قبل انهُ اكل من زاد غيرنا اتاهُ فلان من عربكم في المكان الفلاني و عند ما اقبل عليه نسب عليه اى اخبرهُ انهُ كان ضيفًا عندنا و بعد تخبيره لهُ انهُ مسافر على ملحتنا سلبهُ والان نحن نريد حقنا - فيرسل شيخ عشيرة السالب وراء الرجل المتعدي و يحصل المسلوب منهُ تمامًا و يسلمهُ لصاحبه من[6] ثمّ يحصل من السالب حق المعزّب المتعدّى على ضيفه جمل[7] وناقة و عشرة روس غنم وسيف[8] و رمح[9] *

و اذا عشيرة السالب رفضت طلب معازيب الضيف وما دفعت لهم المسلوب من ضيفهم و ايضًا لم تدفع حق المعزب ينتج من ذلك حرب بين العشيرتين و بعض الاحيان يسفك دماء رجال كثيرين بهذا

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1 كلما
2 ابريق
3 مرتبطة
4 شيخ
5 اي
6 Omit.
7 جمال
8 وسيفا
9 ورمحا

السبب و من حقوق الضيف انهُ يسافر من عند معـــزبهِ مثل ما اتى لعقده و اذا بعض الاوقات سُرقت فرس الضيف من بيت معزبهِ او ماتت يلتزم المعزب يقدم فرس[1] لضيفه و خلاصة الامر وقار الضيف عند العرب و احترامه على جانب عظيم جداً و ذلك يدل على كرم النفس و الحمية و حب الشرف *

الحزن

العوائد في الموت * عند ما يموت رجل في العشيرة تحضر عموم رجال عشيرتهِ و اصحاب الخيول يركبون خيولهم و ينصبون ميدان طراد كانهم في ساحة الحرب و بعد مرور نصف ساعة تحوّل اصحاب الخيول وتربط خيولها و يدخلون على الميت و يضعونه على فراش و يضعون آلات حربه على جانبه والنساء يأتين[2] مزيّنات بافخر ملبوسهم[3] و في ايديهم[4] السيوف و يبتدئون[5] في الرقص و لعب السيف و الغنى[6] مدة ستة[7] ساعات و بعد ذلك يذهبون الى الدفن و بعد ان يوارون[8] الميت التراب يرجعون رجالاً و نساءً الى بيت الميت و اذ ذاك تذبح الذبائح و يطبخ الطبيخ من كيس اهل الميت وتقدم[9] المناسف لجميع الحاضرين فبعد الخلاص من اكل الطعام تذهب الرجال الى بيوتها و تبقى النساء في بيت الميت مدة من سبعة ايام الى الاربعين يومًا و طول المدة تكون على حسب

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1 فرسا 2 يأتين 3 ملبوسهن 4 ايادیهن 5 و يبتدئن
6 و الغناء 7 ست 8 يوارو 9 و تقدم

مقام الميت فاذا كان الرجل المتوفي[1] من اكابر القوم يكون البكاء و الذبح عليه اربعون[2] يوماً و اذا كان من دون القوم تكون المدة سبعة ايام و في كل هذه المدة تلتزم[3] اهل الميت بتقديم الاكل و الشرب و القهوة و التتن في كل يوم ثلاث مرات لجميع النساء الحاضرات و بعد خلاص تلك المدة من واجبات اهل الميت ان يقدموا لكل امرأة لبسة اعني نوع[4] من الثياب مثل سلطة جوخ وكبر جوخ و شنبر حرير او حطة حرير او جزمة حمرآء و اذا تصدف ان الميت من الشيوخ او من الاغنياء لربما تكون كلفة القيمة التي تحضرها اهله بعض اوقاتٍ من اكل و شرب و قهوة و تتن و ملبوس تنوف عن مايةٍ وخمسون[5] ليرة ... و من جملة عوائدهم متى وصل خبر المتوفي[6] لعند[7] عشائر العربان المجاورة تحضر كل عشيرة لبيت الميت لاجل التعزية و يصحبون معهم ذبائح من الغنم او من المعزى و يسمون تلك الذبائح قيدة او مونسة و غب ما يبلغون الوصول الى بيت الميت تذبح كل الذبائح التي جلبوها على[8] آخر ذبيحة و تتقدم[9] الى المعزية على مناسف من طبخ البرغل و السمن فوقها كانه ماء من كثرته و الاكل يكون دربلة في الايادي حسب عادة الفرح *

و من عوائدهم ايضًا ان النساء التي هم[10] من محرم المتوفي[11] اعني اللواتي هم[12] من لحمهِ و دمهِ مثل اختهِ و ابنتهِ و امراتهِ و نساء اخوتهِ

المتوفى 1	اربعين 2	يلتزم 3	نوعا 4
وخمسين 5	المتوفى 6	Omit. 7	عن 8
تقدم 9	اللواتي هن 10	المتوفى 11	هن 12

و اعمامه يجرخون[1] خدودهم[2] باضافيرهم[3] حتى يخرج الدم و ايضا يخرقون[4] ثيابهم[5] و يضعون[6] التراب على رؤسهم[7] ومن جملة عوائدهم[8] ايضًا يرخون[9] شعور رؤسهم[10] على وجوههم[11] وعلى اكتافهم[12] و بعد مرور ستة اشهر تجتمع العشيرة رجال[13] و نساء الى بيت الميت و يقيمون مناحة مدة يوم و في آخر النهار يذهبون لزيارة القبر و هكذا يفعلون بعد تمام السنة *

و الذبيحة التي تذبح بعد موارات[14] الميت في التراب تسمّى عندهم مؤنّسة الى المتوفي[15] *

في عوائد الغزو

الغزو عشائر من العربان تقارم بعضها و عندما تقصد عشيرة تغزى[16] الاخرى يبتدي شيخ العربان بان ينبه على جميع عربانهِ قبل يوم الغزو بنحو ثلاثة ايام فحينئذٍ تحضر اوجه العربان الى بيت الشيخ فبعد ما يعمل لهم شروط الضيافة من ما كل و عليق خيولهم اذ ذاك يقول لهم يا وجه العرب قد اتاني خبر وكاد اعني[17] حقيقة على ان العرب الفلانية هم موجودين[18] في الارض الفلانية و ان ضمهم قليل جدًا ضمهم[19] اعني خيلهم ليست كثيرة و بعد ثلاثة ايام نريد نغزيهم[20] اعلموا جميع عربانكم ليجهزوا حالهم

يجرحن 1	خدودهن 2	باظافيرهن 3	يخرقن 4
ثيابهن 5	و يضعن 6	رووسهن 7	عوائدهن 8
يرخين 9	رؤوسهن 10	وجوههن 11	اكتافهن 12
رجالا 13	موارات 14	المتوفى 15	تغزو 16
اي 17	موجودون 18	ضمهم 19	نغزوهم 20

و في اليوم المعيّن تجتمع جميع الخيل فى الارض والمكان الفلاني فيركبون[1] اوجه العرب من عند شيخهم كل واحد الى فريقه و عند وصولهم الى بيوتهم كلٌّ منهم يجمع عربه و يعمل لهم ضيافة و بعد الضيافة يقول لهم نريد نغزى[2] العرب الفلانية في مكان كذا و يوم[3] الفلاني يجب تكون كامل الخيل مجتمعة جميعها فيذهبون كل الى بيته و كل خيال يلزم[4] بان يجهز ذهاب السفر من اكل و ماء لأجله و لاجل فرسه وما يلزم من الشعير لاكل فرسه ايضا و في اليوم المعين تلتقي تلك الخيول جميعها جمهور[5] واحد[6] و كل خيال محمل ذهابه على جمل و كل جمل قايده رجل مخصوص من اقارب صاحبه و تلك الجمال تسمي عندهم ركب[7] و يكون اخذ قيادة الجيوش جميعها شيخ عشيرة و كلهم ينقادون لامره فغب ان تتكامل الجموع يقول الشيخ انتم يا هل[8] الخيل اركبوا و انتم يا قادت[9] الركب اعني يا قادة الجمـــال اذهبوا الى الارض الفلانية و انتظروا الخيل هناك الى ان ياتي الخيـــل اليكم اذ ذاك تذهب الخيل قاصدة مواشي اضدادهم حيث تكون ترعى في البرية و الركب تذهب في المكان المعين لتكمن فيه - والان نرجع الى الخيل فعندما تصير على بعد مسافة ستة[10] او سبعة[11] ساعات عن منازل العربان اضدادهم تكمن جميع الخيل في بعض شعب و ينفرد منها نحو عشرة خيالة ولا يزالوا[12] سائرين حتى يصيروا على مقربة من بيوت العدو و هناك يكمنون النهار و الليل بطوله و في الصباح يلاحظون اي ناحية يتـــوجه

يلتزم 4	اليوم 3	نغزو 2	فيركب 1
اهل 8	ركبا 7	واحدا 6	جمهورا 5
يزالون 12	سبع 11	ست 10	قادة 9

الطرش مع رعيانه لاجل المرعى و حيث لابد في الصباح من تسريح المواشي الى البرية صحبة رعيانه فعندما ترى الخيالة الراقبة ان الطروش خرجت من البيوت قاصدة المرعى تركب تلك الخيول قاصدة كمين خيول عربانهم لاجل يخبرونهم[1] ان المواشي توجهت الى الجهة الفلانية اذ ذاك يركب العقيد اعني الشيخ و تركب جميع الخيول و يذهبون قاصدين الطرش و عندما يضعون ارجلهم في الركب يلفظون بعض كلمات (يا لله[2] يرزق العيال) و حال ما يقبلون على تلك المواشي على مسافة ساعة يشنون الغارة و يجمعون الطرش جميعه و ياخذونه في صدور خيولهم ولا يمضي الا القليل حتى يصل الخبر الى اصحاب المواشي اذ ذاك تركب جميع خيولهم طالبة تخليص حلالهم من يد الاعدا و بعض الاحيان يبقى طلب الخيل وراء الخيل يوما او اكثر حتى تدرك الخيل الخيل الاخرى و ينصب بين الطرفين ميزان الحرب و الطراد فاذا اخذت اصحاب المواشي الفوز و الانتصار تسترجع ما سلب لها من الجمال و الغنم و ترجع في الغناء و النشائد دلالة على الفوز و الغلبة فتلاقيهم حريمهم الى خارج البيوت بنحو ساعة في الزلاغيط[3] و الرقص ثم يرجع الكلام الى ما يتوقع في مدة الطراد و الحرب و ما عندهم من العوائد بمثل هكذا ظروف فاذا ادرك فارس فارسا آخر و ضربه برمحه او بسيفه و جندله عن ظهر جواده الى الارض يقول لرامية انابجيرتك اعفي[4] عني عفى الله[5] عنك اذ ذاك

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1 ان يخبروهم 2 الله 3 الزغاريت 4 اعف 5 عفا

يحول الفارس المنتصر عن جواده و يكتف ذلك الرجل المرمي[1] و يسوقه قدامه ماشيا بعد ان ياخذ سلاحه و آلات حربه منه و يركب الفارس المنتصر على جواده و يقود جواد الاسير و رائه[2] حتى يبلـــغ الوصول الى عربانه و يبحش اي يحفر جودة في الارض قدام بيته عمقها نحو ذراع و يضع ذلك الرجل الاسير في تلك الحفرة و يطمه بقليل من التراب و يضع على فم الحفرة غطاء و مع كل ذلك تكون رجلي[3] الاسير مقيدة[4] بقيد من حديد و كل يوم يقدمون له شيء قليل[5] من الاكل و ايضا كل يوم يخرجونه من الحفرة مقدار ساعة لاجل قضاء حاجته كعادة الناس في بيت الماء و عند ما يذهب لخارج البيوت يكون مكتوف اليدين و حارسه رجل ناقل آلة حربه و بعد ان يخرج ما تحصل معه من القذار[6] في الجوف خارج البيوت يرجع وحارسه و رائه[7] و يضعه في الحفرة حسب العادة فبعض الاحيان يموت الاسير وهو على تلك الحالة و بعض الاحيان يشفقون عليه و يخلون سبيله و انما اذا صارت حرب ثانية فيما بين العشيرتين و وقع الرجل الذي كان مأسورا قبلا يقطعون رأسه حالا بدون شفقة البتة و من عوائدهم ايضا اذا ادرك فارس فارسا آخر بساحة القتال و وضعه تحت الضربة يقول له جيرني[8] اجارك الله و هذا عندي يوم من ايام العرب اذ ذاك يرفع الفارس المنتصر الضربة عن الفارس الذي طلب منه العفة[9] و يقول له الله احياك اذهب بسلام و هذا عندك يوم من ايام العرب

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1 المرمي
2 و راءه
3 رجلاه
4 مقيدتين
5 شيئا قليلا
6 القذر
7 و راءه
8 اجرني
9 العفو

فاذا وقعت حرب ثانية بين العشيرتين و انتصر الفارس الذي كان مغلوبا المرة الاولى و وقع تحت يده الفارس الذي اعفى[1] عنه او احدى[2] اقاربه يعفي[3] عنهم ولا يضرهم بشئ و هذا يسمى عندهم جميل بجميل و انما الفخر للبادي من[4] ثم يرجع الكلام الى الركب اي الرجال الذي[5] تقدم الكلام عنهم قادة الجمال اللذين[6] كامنين[7] ومعهم الماء و الزاد و العليق للخيل منتظرين اقبال الخيل التي غارت على الغزو فالخيل سواء ان كانت كاسبة او غير كاسبة لابد لها ان تمر على الركب التي بانتظارهم فعند ما تقبل الخيل عليهم تركب قادة الجمال على جمالهم فاذا كانت خيلهم جالبة الكسب في صدرها و اصحاب المواشي لم يزل طالبة[8] و رائهم لاجل تخليص مواشيهم و الطراد قائم على العدو و في بعض الاحيان يكون انكسار القوم عن يد راكبين[9] الابل و اذا وصلت الخيل لعند[10] ركب الجمال خاسرين و ليس[11] ظافرين تمشي ركب الجمال مع الخيل سوية طالبين اهلهم و من عوائدهم ايضا اذا كانت الخيل راجعة من الغزو كاسبة غانمة و التقوا في رجل او في امرأة يبحر اعني ينظر ذلك الرجل عابر السبيل و تلك المرأة الى عقيد الخيل و يقول كوى[12] الرجل فيجيبه ذلك العقيد هلا[13] و رحب اذ ذاك يقول الرجل الى شيخ العرب اعني عقيد الخيل الحذية الحذية فحالا يامر له العقيد في[14] قسم من الكسب ان كان جمال[15] او غنم[16]

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1 عفا	2 احد	3 يعفو	4 Omit.
5 الذين	6 الذين	7 هم كامنون	8 لا يزالون طالبين
9 راكبي	10 عند	11 غير	12 كو
13 اهلا و رحبا	14 ب	15 جمالا	16 غنما

و في بعض الاوقات يكون نصيب ذلك الرجل من جمل الى عشرة جمال على قدر ما يكون الكسب كثيرا او قليل[1] وهكذا من الغنم ايضا *

و من عوائدهم اذا تصدف ان ذلك الغزو ظفر في الكسب و استخلصه و كانت تلك العصي اى الرعية التي سلبت من حلال رجل او اثنين و ليس من حلال العربان جميعهم تقوم جميع العربان بوجه العموم و ينظرون قدر الجمال التي سلبت و يجمعون من حلالهم بقدر ما سلبت و يعطونها لهم عيضة[2] عن جمالهم - و من عوائدهم يكون نصيب عقيد الغزو من الكسب بقدر خمسة من الفرسان و ما تبقى يقسم الكسب على الخيل و ركب الجمال سوية بدون تمييز رجل عن الاخر وهكذا كل عشيرة تمشي على هذه العوائد *

بعض قوانينهم الشرعية

ان القضاة عند العربان سدج لا يعرفون القراءة ولا الكتابة بل انما ياخذون وظيفة القضوية[3] بالارث خلف[4] عن سلف وهولاء القضاة يتفننون[5] في تحكيم الدعاوي بين المتخاصمين و يعطون كل ذي حق حقه و على ما اظن ان القضاة المتفننين[6] في العلوم الفقهية لا يقدرون على ما يقدرون[7] عليه قضاة هؤلاء القوم المتوحشين وهاك بعض اخبار عن دعاوي[8] حكموا فيها عقليا و ليس عن كتب الشريعة : تصدف ان اخين[9] مقترنين فقراء[10] الحال[11]

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1 قليلا 2 عوضا 3 القضاء 4 خلفا 5 يتفننون 6 المتفننين

7 يقدر 8 دعاوٍ 9 اخوين 10 فقيري 11 Supply كانا

ساكنين في بيت واحد و بالصدفة ان نسائهما[1] ولدتا في يوم واحد الواحدة ولدت ذكرا[2] و الاخرى ولدت انثى[3] و بينما ام الولد الذكر نائمة نهضت سلفتها ام الانثى و ذهبت الى فراش ام الولد و اخذت الولد من جانب امه و وضعت ابنتها مكانه و من عوائد العرب ان يلفوا الطفل اياما لا يشلحونه ثيابه و في مساء ذلك اليوم قدم رجالهما[4] من رعية الطرش فكل واحدة من النساء قالت لبعلها بشرى لك يا رجل رزقت غلام[5] فكون ام الولد الحقيقية تعرف ان سلفتها وضعت ابنة في الحال كشفت عن الولد الذي بجانبها فوجدته ابنتا[6] و ليس صبيا فاذ ذاك اخبرت بعلها باني انا وضعت الذكر و سلفتي وضعت الانثى و الان ارى امامي الانثى و بجانب سلفتي الذكر اذ ذاك انتشب الخصام بينهم حتى وصلت المسئلة لشيخ عشيرتهم فامرهما ذلك الشيخ ان يذهبوا الى القاضي ليقضي بينهم فتوجها الى القاضي و بسطا دعواهما فعندئذ صدر امر القاضي ان يحلب من ثدي كل من الامرأتين مقدارا بكيل مدقق و وضع ذلك الحليب مقابيل[7] بعضه في ميزان مدقق فرجح حليب ام الذكر على حليب ام الانثى مقدارا حينئذ خرج حكمه ان الحليب الاثقل وزنا هو الى ام الذكر و قال ايضا اذا كنتم لا تقبلون بهذا الحكم تحوجوني ان اجلب القملة ولا يخفى ان عند العرب قمل كثير[8] و قصده في القملة ان يضع كمية من حليب الذكر بصحن و يضع القملة في وسطه فلا تقدر القملة

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1 نساءهما 2 ذكرا 3 انثى 4 رجالهما
5 غلاما 6 ابنة 7 مقابل بعضهما 8 قملا كثيرا

ان تتخلص من حليب الذكر نظرا لوجود الصمغ فيه اكثر مما يوجد في حليب الانثى و انما اذا وضعت القملة في حليب الانثى تخرج منه بدون مشقة لعدم وجود المادة فيه و بعد هذا الحكم صار التحري والفحص المدقق فبان حقيقة ان الولد الذكر سرق من والدته و بعد هذا الحكم سلم الولد لامه الحقيقية و الابنة الى امها *

نبذة ثانية

رجل متزوج بامرأتين الواحدة عاقر و الثانية ليست بعاقر رزقت الامرأة التي ليست بعاقر ولد[1] و بهذا السبب صار الرجل يحب ام الولد اكثر من تلك فوقع روح الحسد عند الضرة و كمنت بقلبها ان لابد لي ان اميت هذا الولد و اخذت تترقب الفرص لتفعل هذا الفعل الردي فعندما ذهب[2] في وقت ما ام الولد خارج البيت لتلتقط جلة من البرية نهضت تلك الامرأة الشريرة و وضعت يدها على فم الطفل و انفه و اماتته فطيسا فعندما رجعت ام الولد الى البيت وجدت طفلها ميتا يعلو جسمه ازرقاق صرخت و ويلاى[3] لماذا فعلت معي هذا الفعل و انتشب الصياح بينهما و انتصر اهل كل امرأة لنجدتها و قوي الخصام بين الطرفين حتى توصل لدرجة الحرب بينهم فاذ ذاك حضر الامير و سكن الهيجان و امرهم ان يذهبوا الى[4] عند القاضي ليحكم بينهم فذهبوا و كل منهم صدر دعواه حينئذ طلب القاضي ام الولد على انفراد و قال لها انا اعرف ان ضرتك

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1 ولدا 2 ذهبت 3 واويلاه 4 Omit.

الردية اماتت ابنك حسدا فالان اطلب منك شيء[1] اذا فعلتيه[2] احكم بدم انسان على ضرتك و اقاربها فقالت تلك الامرأة ماذا تطلب مني قال لها اذهبي الى راس الفريق اي بيوت العربان و اشلحي ثوبك ولفيه على راسك حتى تبان عورة جسمك لدى العربان جميعهم واذهبي من راس البيوت الى بيتنا هذا و انت بدون سترة على جسمك و بعد هذا العمل أخرج الحكم لك اجابته الامرأة لا يا مولاي لا افعل هذا اترك دم ابني الطفل و احفظ عرضي بين العربان لان عدمت ابني و اعدم عرضي ايضا لا افعل لا افعل لا افعل قال لها القاضي ادخلي و استريحي في بيت الحريم و استدعى الامرأة الثانية على انفراد و قال لها اطلب منك شيء[3] اذا فعلتيه[4] ابرك من هذه الجناية قالت له امرك ماذا تريد ان افعل اجابها يلزم ان تشلحي ثوبك و تلفيه على راسك كما اخبر ضرتها فعندها قالت الامرأة هذا شيء سهل افعله بكل رغبة فقط بشرط انك تبررني قال لها اذهبي الى راس البيوت و شمري ثوبك و اركضي بوسط العرب من هناك الى هنا كي الجميع يروا[5] عورتك و انا ابررك فذهبت اذ ذاك استدعى القاضي رجلا مهابا و قال له اذهب و راء هذه الامرأة الى رأس البيوت و عندما تنظرها رفعت ثوبها عن لحمها حالا البسها الثوب و امنعها و تعال بها الى ههنا ففعل الرجل كما أمر فبعد هذا كله حكم القاضي ان دم الولد يطلب من هذه الامرأة الردية فالبعض

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1 شيئا 2 فعلتيه 3 شيئا 4 فعلتيه

5 يرى الجميع

من اوجه العرب اعترضوا على القاضي كيف تحكم على هذه الامرأة بهذه الجناية بدون شهود اجابهم القاضي ان الامرأة التي تبيح عرضها و تكشف عورتها بدون حياء امام العربان جميعهم بلا شك تفعل هذا الفعل القبيح اجابوه ان حكمك بموقعه لا يرد و جرى قصاصها بالموت خنقا نظير ما فعلت يدها *

نبذة ثالثة

اشخاص اتهموا بقتل رجل و هو مسافر في طريقه و لكن لم يعرف من منهم الذي ارتكب هذه الجناية فاهل القتيل قاموا[1] الدعوى على خمسة اشخاص لعلمهم ان بينهم و بين المقتول ضغاين و لكن لم يقدروا ان يقولوا زيد قتل عمرا حقيقة فعندما امتثلوا لدى القاضي و فحص الفحص المدقق و جد جميعهم يبرؤن ذواتهم و حيث ان لم يوجد شهود لاثبات تلك الدعوى على واحد مخصوص امر القاضي انه بعد ستة اشهر اخرج الحكم على الجاني فبعد الستة اشهر طلب القاضي من امير العرب ان يجمع عموم العربان الى مرجة فسيحة و يضعهم رجل[2] بجانب رجل و اضعين ايديهم على صدورهم بهيئة صليب واخبرهم بصوت عال ان القاضي يريد يتكلم في اذانكم فيجب عليكم الاصغآء ان ذاك تكلم القاضي في آذان الجميع قائلا اريد اتكلم كلمتين فقط فعندما افوه بهما كل من يبقى حافظ[3] يديه بهيئة صليب على صدره ياخذ من الامير جائزة فرس[4] و سيفا

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1 اقاموا 2 رجلا 3 حافظا 4 فرسا

و رمحا و قال أقبلتم على هذا الشرط اجابوا جميعهم نعم اذ ذاك وقف القاضي و الامير و اوجه العرب بجانبهما امام الجمهور المنتظم بالوقف و تكلم القاضي بصوت عال أيا عرب انا عرفت من طار عقاله عن راسه فهو قاتل ابن البديين اى اسم الرجل المقتول فقبل ان القاضي يطبق فمه و اذا برجل رفع يديه على راسه لامسا عقاله فتقدم الامير و القاضي و اوجه العرب و قبضوا على الرجل و بعد محاورة طويلة اقر ذلك الرجل بان يمينه سفكت دم ذلك المسكين *

عن الايمان

ان البدو يستعملون الحلف في احاديثهم كثيرا فلا يسردون جملة الا و يلفظون بالله و الله مرارا عديدة و صلوة محمد و يقسمون في هذه الالفاظ صادقون[1] ام كاذبون[2] لاخلاف عندهم اما الايمان[3] المعول عليه[4] عندهم و الذي[5] يستعملونه[6] في محاكماتهم و في قضاياهم المهمة هو هذا[7] (حق[8] العود و الرب المعبود و خطة سليمان ابن داود) و قبل شروع احدهم في هذا[9] اليمين يمسك عودا في يده و يرسم به دائرة على الارض امام الحاضرين و حينئذ يتلو هذا[10] اليمين امام اولئك[11] القوم الذين يكونوا[12] اذ ذاك شهودا عليه و عند حضورهم امام القاضي في دعاوي[13] مهمة و اوجب الأمر الى الحلف فيلقنه القاضي قائلا قل ايها البديوي و حق الخمس و الجواري

صادقين 1	كاذبين 2	اليمين 3	عليها 4
و التي 5	يستعملونها 6	فهي هذه 7	و حق 8
هذه 9	هذه 10	اولئك 11	يكونون 12	دعاوٍ 13

الكنس و الخضرآء و الغبرآء فبعد ان يلفظ هذه الكلمات امام الجمهور فيلتزم حينئذ بالغرامة و يقضى الأمر بدون معالجة ولا مماحكة و ايضا يستعملون غير الفاظ وهي و تربة[1] عيسى و موسى فهذه الاقوال الذي[2] يستعملونها فى الحلف و القسم و يتكلون على هذه الالفاظ في جميع معاملاتهم مع بعضهم البعض فيستدينون من بعضهم فيقتنع الداين من المديون فقط بالقسم بدون كتابات رسمية كما هي العوائد بين القوم المتمدن[3] و تراهم يصادقون بعضهم ولا يصير اختلاف الاماندر فسبحان من جعلهم يرتضون بهذه القوانين البسيطة *

تابع الجيزة[4]

فانهم بعد ما ينتهون من الرقص و السحجة و من كل ما ذكر سابقا يقوم العريس منتصبا على اقدامه و يهجم راكضا بسرعة بين النساء آخذا من يأتي بطريقه الى المكان الذي تكون فيه العروس فحينئذ يضرب العروس بعصاء[5] تكون بيده فيخدش راسها فيعتقد اذ ذاك بانه قد تسلط عليها و ما عادت تعصي له امر[6] ما دامها[7] في قيد الحياة و يوجد عادة اخرى وهو انه بعد ان ينتهون[8] من الغناء و الرقص حسب ما تقدم يوقفون العريس على باب الخبآء اي خبآء العروس و يتقدم من ورائه شابان قويان و يدفعونه[9] دفعة قوية فان سقط على وجهه يضحكون عليه ولا

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1 و تربة 2 التي 3 المتمدنين
4 Metathesis for الزنجية
5 بعصا 6 امرا
7 داما 8 ينتهوا 9 و يدفعانه

يأذنون له بالزواج تلك الليلة و الا اي ان لم يقع فينصرفون عنه الى بيوتهم ولا يبقى عنده الا اقاربه اللزم و حينئذ ينتهي كل شيء *

تابع الحزن

انهم بعد ان يعملون[1] فروض الحزن التي تقدم ذكرها يحملون الفقيد على الواح كما هي العادة بين الحضر و في مرورهم على الطريق عندما يصلون الى بيت يتظاهرون بانهم غير قادرين على المشي معتقدين بان الميت يجذبهم غصبا لناحية البيت الذي في طريقهم فيميلون اليه فحينئذ صاحب البيت يجلب للميت حطة او سلطة او عباة[2] حسب المتيسر و هكذا الحال من بيت الى بيت حتى وصولهم الى التربة و اذ ذاك يوارونه التراب و ينصرف كل واحد منهم الى بيته بعد ان يغسلوا ايديهم على القبر اي يمسك واحد من الحاضرين ابريقا و يتقدم الحاضرون واحد[3] فواحد على القبر و يغسلون ايديهم راحمين اياه و يعتقدون بان الروح لم تزل باقية في اذن الشمال و ان الميت يسمع كل ما يقال له من فروض الصلوة و غيرها *

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[1] يعملوا

[2] عباءة

[3] واحدا فواحدا

MODERN CUSTOMS AMONG THE BEDOUINS OF THE ḤAURÁN.

Betrothal.

A young man seeks in the first place a suitable girl to whom he may pay his addresses. He then makes repeated visits to her father's tent where he occasionally eats and drinks and may at times impose on the girl the trouble of washing his head and combing his hair. Thus the two have free intercourse with each other without the slightest objection on the part of her people. But throughout the whole of this period, notwithstanding the complete freedom of intimacy between the youth and the girl, they scrupulously adhere to the injunctions of propriety and honour, following in this the custom of civilized communities. When their mutual attachment is assured and they are satisfied that there exists between them similarity of tastes, the youth requests his father to solicit her betrothal to him The father readily complies and invites the principal men of his tribe and they all mount their horses and proceed to the house of the girl's father who rises to meet them as they approach with the rest of his relatives that may be present. They are helped to dismount and the best carpets at hand are spread for them. Some cow-dung and camel-dung is now quickly brought and a fire kindled in the middle of the tent. Coffee is then prepared and poured out to the guests in cups, each cup containing but a sip. As the oldest among them takes a cup, he places it in front of him, saying to the girl's father, "We will not drink of thy coffee unless thou give her to me." The rest of his companions repeat the same thing in turn. The master of the house, *i. e.*, the father of the girl or one of the chief men of his tribe then addresses them, saying; "Drink your coffee and it shall be as you wish." Upon this, each one takes his cup and drinks it off. In the meanwhile the master of the house orders a sheep or a goat to be slaughtered, the flesh of which is cut into pieces of about half an ounce[1] weight each, and these are boiled in milk till they are thoroughly done and then placed in a large dish of *burghul*[2] not less in quantity

[1] An ounce, أوقية (from the Greek *οὐγγία* or *οὐγκία*) is one-twelfth of a *riṭl* or pound of twelve ounces; measured in *dirhams*, it was formerly equal to forty, but at the present day it varies in most cities: In Syria, according to the *Majáni 'l Adab*, the ounce equals 66⅔ dirhams.

[2] This is the name of the ordinary dinner of the Arab peasants. It consists of boiled wheat, dried and husked, prepared with fat or butter, and eaten with sour milk or meat.

than half a *mudd*[1] which is equivalent to a weight of five thousand six hundred *dirhams*.

This dish is set in the midst before the guests, and about two thousand *dirhams* weight[2] of cold clarified butter is brought and placed in the dish over the *burghul*. One of the relations of the master of the house then comes forward with a ewer of cold water in his hand and lightly washes the hand of each of the guests. The master of the house then turns to his guests and says to them, "Welcome to what has been provided," that is, "partake of the meal." They reply, "We will not eat of thy food unless thou give her to us," upon which, if he desires to give his daughter in marriage to their son, he rejoins, "Be pleased to eat your meal and it shall be as you wish." They then proceed to eat with their hands, using neither spoon nor bread. Some of their habits in eating are curious: for example a man will take as much meal and flesh-meat as the hand can grasp, probably more than sixty *dirhams* weight, and shape it into the form of a ball, and put it into his mouth without touching it with his other hand or masticating it, and catching it upon his tongue, at one mouthful swallow it whole.[3] When they are satisfied, they wipe their hands on the side of the tent and they clean whatever remains of grease there may be left, upon their beards. They then return to their seats and take coffee a second time. The father of the youth then turns to the girl's father who[4] says:—"Be happy, she is thine." On this the former asks what dower he demands for her. The girl's father answers, "I must

[1] There is a discrepancy in these weights. If the *mudd* be calculated at the ordinary dry measure of 1½ to 2 *riṭls*, half a *mudd* would be ridiculously little to place on a large dish before hungry Arabs. Taking the equivalent calculation of 5,600 dirhams, at 66⅔ to an ounce, it would give exactly seven *riṭls* or pounds of twelve ounces, which is perhaps a sufficient meal. Or taking 40 dirhams to the oz, the ancient weight, this would give 11⅔ as representing 5,600 dirhams. The *mudd* must therefore be an error in the text. In Syria and Egypt at the present day, 12 *mudds* are equal to 6½ kilogrammes, which would make a *mudd* = 1·2 of an English pound avoirdupois.

[2] Two and a half *riṭls* or pounds of 12 oz., but the *riṭl* varies somewhat. v. Lane. "Mod. Egypt.," p. 572.

[3] This manner of eating is at least as old as the 'Arabian Nights.' "Jawán the Kurdee stretched forth his hand to the dish, and it resembled the foot of a raven; and he ladled the rice with it, and took it forth resembling the foot of a camel. Then he compressed the handful into the form of a ball, so that it was like a great orange: he threw it rapidly into his mouth and it descended into his throat making a noise like thunder."—"Story of 'Ali Sher and Zumurrud." Lane. II. 413.

[4] The grammatical construction is here faulty. Either the positions of the fathers of the youth and girl must be inverted in the sentence or the relative pronoun introduced to give the sense of the passage.

have fifteen thousand piastres." Those present then address the father of the bride, one by one beginning with the oldest, saying, "What wilt thou deduct for my sake?" The bride's father replies, "For thy sake I abate of what is due to me, one thousand piastres." The next then requests him to lessen the sum by 900, and in the same way he abates 800 for the third, and so on until he reaches the customary amount according to the established usage among them.[1] When the conference is concluded, the bridegroom's father and the father of the bride rise and kiss each other on the moustache and such of the relatives of both families as may be present stand up and address the fathers of the bride and bridegroom saying, "May their union be blessed; may it be life long." An animal is then slaughtered at the expense of the bridegroom and a dish of *burghul* is prepared therewith and all the relatives of the bride are invited to partake of it. The bridegroom's party then rise to depart, inviting all the members of the bride's family to accompany them to a feast at the tent of the bridegroom. Both[2] parties then mount and proceed thither. The relatives of the bridegroom welcome them with expressions of delight and pleasure and receive them with all possible honour. Some wealthy man may also on such occasions slaughter a camel worth perhaps twenty gold pieces (*líras*). Both families continue to pay each other visits in this fashion till the marriage contract is duly signed.

Marriage.

The bridegroom's family first send word to the family of the bride informing them of the day on which they require the bride. On the appointed day a party of them mount their horses taking their spears and swords, and some ten girls of the bridegroom's family or of his relatives are decked out and dressed in their best apparel, wearing ornaments of silver or brass and having their hair dressed with camel's urine which gives a bright gloss to its colour.[3] And they choose the best of their camels and clothe them with silk trappings of red, green, and yellow, and from both sides of each camel long tassels hang reaching to the ground. Each camel likewise carries a seat accommodating

[1] According to Burton, this is usually about thirty Spanish dollars which were most prized in El Hejáz, in Yemen, the Maria Theresa. The Spanish Government refused to perpetuate its Pillar-dollars, at one time a great favourite in the East. The dollar was called Riyál Fransah. Mecca—III. 82. Edit. 1856.

[2] The word in the text is طرفية, probably a clerical error for الطرفين meaning الطرفان.

[3] Burton observes that the Bedouin hair becomes coarse from exposure, not a little increased by the بول الابل or wash alluded to in the text. The only *cosmetic* is clarified butter freely applied both to the body and the hair.

two girls, which they call *ḥaṣrah*. The girls are placed two and two on the camels each of which is led by a poor man who receives about six piastres for his hire. When all the horses and the caparisoned camels are ready, the men mount the horses and the girls their camels and they form a cavalcade, the men on horseback brandishing their swords and spears and feigning attacks on each other, while the girls on their litters on the backs of the camels sing with shrill screams of joy some such strain as the following[1]:—

* * * * * *

The men never cease attacking each other in mimic combat and the girls to sing till they reach the house of the bride. The horsemen continue their sports for the space of half an hour before the house, after which the men and girls dismount and enter the apartment which the bride occupies, but the girls[2] and men sit in another apartment where the customary food is brought to them, consisting of *burghul* and meat, and portions thereof for the girls and the bride. After the repast the girls rise and take the bride into a private apartment and heating a cauldron of water they bathe and dress her in garments of wool and silk and lead her forth singing as follows:—

Walk proudly, O daughter of the Emir,
Thy affianced is the first of horsemen.
Walk proudly, O daughter of the Bedouins,
Thy spouse is the slayer of his enemies.
Walk proudly, O daughter of the Arab,
Thy lord is hospitable to the stranger.
Walk proudly, O daughter of princes
Thy affianced is Abú Zayd al Hiláli.[3]

The men then mount their horses and the girls their litters, the bride being seated on one that is decorated and distinguished from the others by its ornamentation. She is accompanied by one of the bride-

[1] I leave the translation of these distiches, of which I can make no decent sense, to greater scholarship or ingenuity than mine. As the lines are not altogether cleanly, delicacy of language not being a point with Arabian ladies, the omission is not to be regretted. The metre is an irregular *Hazaj*. Some of the expressions I do not trace, and the character of the MS. provokes suspicion of its accuracy.

[2] It is probably meant that the girls and bride are in one apartment and the men in another but the construction will not grammatically admit of this.

[3] The exploits of this Admirable Crichton of the Bedouins, are chanted to this day by professional reciters in the coffee-houses of Cairo. See Lane, "Modern Egyptians," p. 394, for his adventurous history. An episode of this romance 'The Stealing of the Mare' has lately been translated from the Arabic by the accomplished Lady Anne Blunt and done into very graceful verse by her husband. Its completion by the same hands is much to be desired.

groom's female relations, his sister, his niece, or a cousin, and with the horses and litters a single cavalcade is formed. The men renew their mimic attacks, and the girls their song from the litters. This procession is styled *Fáridah*, and they thus proceed, the horsemen skirmishing and the women singing, till they reach the bridegroom's house when a tournament is held for the space of about an hour, which the girls from their brancards accompany with loud screams of joy.

When this is concluded the men and girls dismount and lead the bride to the house of some neighbour who has arranged previously to meet and invite her thither, and he causes some lambs to be killed and about a quarter of a *Ḳinṭár* [1] of *burghul* to be prepared. Two large dishes are filled, and a quantity of clarified butter poured over them and one dish is placed before the men and the other before the bride and the women. When the repast is over, a relation of the bridegroom places in the neighbour's hand half a *beshlik*,[2] equivalent in value to a piastre and a half, upon which he calls out with a loud voice, "May God reward thee for this, O such a one," mentioning his name and adding, "may you live for ever—this is half a *líra*."[3] Upon this every one present comes forward one by one and gives the man a piastre, or a piastre and a half, and he exclaims in a loud voice, "May God reward thee for this, O such a one! this is a *líra*," and thus they continue one after another in this manner until not a single person is omitted. After this, the women and the girls advance likewise and put into the man's hand a few *dirhams*, upon which he exclaims, "May God reward thee, O such a one, this is half a *líra*," and so on until all the women and girls have passed. This custom they call *nuḳút*.[4] The whole sum collected does not exceed one hundred and fifty piastres. When this ceremony is concluded, the man to whom this function is delegated, places all the pieces collected into a wrapper and presents it to the bride. This custom is termed *Shobásh*;[5] and

[1] The *Ḳinṭar* according to Dozy (the French quintal from the root of the Lat. *centum*) is a weight of a hundred pounds and is still of that measure in Syria.

[2] As a unit of value, it is a piece of five piastres (from the Turkish *besh*, five, and the termination *lik* (لك) or *liḳ* (لق), signifying function or quality), but local variations no doubt account for the difference in the text.

[3] This is said *honoris causa*, to magnify the amount of the gift. The Turkish *líra* (gold) was current at 30½ to 33½ *krans* to the pound sterling in Turkish Arabia in 1891, the Indian rupee at 2½ *krans*, varying of course according to the relative value of the metals. The *ghursh* or piastre is a corruption of the German groschen.

[4] Plural of نقط *nakat*, pieces of money given to musicians at a fête or to the bride at a wedding, as in this instance. v. Lane, "Mod. Egypt.," XXVII.

[5] This term occurs in the "Arabian Nights" (715th night) pronounced *Shobash* (شوبش) in Egypt, and *Shubásh* in Arabic, derived from the Persian *Sháh-báshi*,

is meant as an assistance to the bridegroom. After this, a quantity of fire-wood and cow-dung is collected, and the whole of it is placed in a large meadow, and about an hour after sunset all the men, that is, the whole tribe, assemble, armed with old pistols loaded with powder, and they set fire to the wood collected in the meadow at one time so that the flame shoots up to the height of five or six yards. All the men present then form a circle round the fire, and begin to shout the word *hawalaḥ, hawalaḥ, hawalaḥ,* which they repeat continuously for about four hours without adding to it a single syllable. This ring presents a most inspiriting sight for the fire is generally in full blaze and the men stand around it one beside the other, shoulder to shoulder, the right foot advanced and the left set back, like troops in order of battle, and they clap their hands together in such a manner that a spectator would be unable to determine whether it was a single stroke or the union of many, for they lower them together and raise them together: and notwithstanding the number of men in the circle, it would be impossible to discover one man in advance of another by a finger's breadth, as if they were proficients in geometrical science. When the circle is formed, some three or four women and girls of the bridegroom's relations, wearing their richest apparel and decked with ornaments and trinkets of silver and each with a sword in her hand, enter the middle of the ring and begin to dance, brandishing their swords and directing their points towards the men forming the circle as though attacking an enemy. Upon this the men get wild with excitement like savage animals and draw their pistols loaded with powder, pointing them at the feet of the women and girls as they dance. This performance continues for about four or five hours, the men and the women and the girls vehement and impassioned like camels or excited steeds; and all the while the perspiration pours down from the persons of the men and the dancing women as if from a spout of water. When their strength is exhausted with fatigue, some notable advanced in years, enters the circle formed by the men and calls out in a loud voice, "They are under your protection, O youths, they are under your protection;" upon which they cease their sport and excitement and take rest, and if one were to look at the hands of some of the youths next morning, they would be found swollen from excessive beating and at times their colour blue from the clapping together of the palms and it is often long before they are able to touch anything with their hands.

When all this severe exercise is concluded, they sit in companies

and is synonymous with *nuḳúṭ*. The allusion is to the buffoon's cry at an Egyptian feast, "Shobash 'alayk, ya Ṣáḥib al faraj," *i.e.*, 'a present is due from thee, O giver of the feast.' v. Lane, "Mod. Egypt.," XXVII.

on the ground and coffee which has been prepared for them is brought, after drinking which they depart, each one to his house. On the following day they re-assemble and return to the bridegroom, singing and firing off their pieces. The bridegroom prepares a repast in honour of the youths and after they have eaten and drank, they set to singing and dancing throughout the rest of the day. After this, the bridegroom is feasted in their houses for the space of seven days, breakfasting with one, dining with another and supping with a third until at the conclusion of the seven days the festival terminates.

Hospitality.

When a stranger approaches the tent of his host, its owner rises and hastens to meet him, holds the bridle of his horse and assists him to dismount and ties up the animal. Then with all expedition he brings out his best carpets and spreads them in an apartment of the tent not occupied by the women. A fire is quickly lighted and coffee is brought and he prepares a coffee-pot and offers it first to his guest and afterwards to any others present. After the coffee, some food is brought for the guest and when the guest or guests have eaten, the relatives of the host that may be present partake of the food that the guests have left. Should they invite the host to join them, he refuses, saying, "the host may not serve his own interests—be pleased to eat." When all present have eaten, the host comes and partakes of what food remains. Meanwhile an animal will have been killed and after a little, the host produces a dish of *burghul* and serves it on a platter of brass or wood of not less than a yard in width, and slices the meat in pieces upon the *burghul* and places upon the side of the platter the fat tail of the lamb together with the leg, before the guest. This large piece of meat goes by the name of *Shazât*. Before the meat is served, some water is brought that the guests may wash their hands, after which the meal is placed in the middle and some cold clarified butter is brought and placed on the top of the dish. The host then looks at his guest and says, "Partake, O stranger, of what has been provided," and he invites also those of his relatives who are present, who come forward and sit round the dish and begin to catch up portions in their palms; that is, they take a handful and shape it into a ball, fashioned somewhat oblong and placing the thumb below it, put it into their mouths and pressing it with the tongue, swallow it without the slightest chewing or mastication. Some of these balls occasionally equal a weight of sixty *dirhams*. When those present at the meal are so many that they cannot find room to sit at the dish together, they wait till a place is vacant, and as one vacates a seat, another takes his place and so on until all have eaten.

Meanwhile, that is during the repast, if the butter on the dish should run short, they add more, and one may sometimes see the butter streaming from the hands of the eaters as from a spout. When all present have had their fill, the host comes forward and eats from the side of the dish which often contains portions of food foul from the hands that have been stretched over it. If a guest stays till evening, fodder is given to his horse and another animal is killed, according to the manner above described.

It is customary for the guest when he is at table, to take some meat and give a piece to each of those present who are not seated at the meal in the first instance. When one of those seated at table rises, the host says to him,—"Fill O such a one, this vacant place." When the meal is done, the guest says to the host,—"Many thanks to the host; be this followed with lawful recompense." Meanwhile coffee is continuously being made and whenever one coffee-pot is emptied, another is produced until the guest departs. After his departure he continues still under the hospitality of his host who is responsible for any harm that may befall him, but should he become the guest of others on the road and partake of their hospitality and an accident subsequently occur or he be robbed, it is a charge on the later host and the responsibility of the first determines.

The rights of the host against the robber of his guest are based on prescribed rules. If it happen that the guest be plundered when on his journey from his host's roof, the latter rides with a number of horsemen of his kindred and tribe and visits the chief of the tribe to which the robber belongs and thus addresses him, "Such and such a one was our guest on such a day and he is a traveller on the road and our salt was in his stomach, (*i. e.*, he partook of our food) and he departed and before he had eaten of the salt of others, he was set upon by such a one of your tribe at a certain place. And when the man attacked him, he informed him that he was our guest and notwithstanding his protest that he was travelling under the protection of our salt, he robbed him nevertheless. Now we demand our due." Thereupon the chief of the plunderer's tribe sends after the offender and recovers the whole of the property robbed and makes it over to its owner. He then charges him with an indemnity for the host whose guest has been robbed, consisting of a male and female camel, ten head of sheep, a sword and a spear.

If the tribe of the robber refuse the demands of the guest's entertainers and will not give up the property plundered nor pay the indemnity to the host of the stranger, hostilities ensue between the tribes and occasionally many lives are lost.

Among the rights of the guest is that he shall leave his host's roof as he entered it and if, as sometimes happens, his horse is stolen from his host's house or should die, the host must provide another for him. In fine, the respect and reverence paid to a stranger among the Arabs are very great, which is a proof of their generous spirit, their magnanimity and sense of honour.

Mourning.

The customs observed on occasions of death. When a tribes-man dies all the men of his clan assemble and those who possess horses mount them and engage in a tournament as if they were on the field of battle.

In about half an hour's time, the horsemen dismount and tie up their horses and approaching the dead man, lay him out on a bed and place his weapons by his side. The women then advance attired in their best garments, with swords in their hands and begin to dance, brandishing their swords and singing for the space of about six hours, after which they follow to the interment. When the burial is over, the men and women return to the tent of the deceased and animals are killed and food prepared at the expense of the relatives of the deceased. The dishes are handed round to all present and after the repast, the men return to their houses and the women to the house of the deceased, where they remain during a period of from seven to forty days, the length of their stay depending on the position of the deceased. If he be among the chiefs of the tribe, the mourning and lamentations continue throughout forty days, but if he be of humble station, the period does not exceed seven days. During the whole of this time the relatives of the deceased must furnish the food and drink, coffee and tobacco, three times a day to all the women present.

On the expiry of this period, it is imperative on the relatives of the deceased to present each woman with some wearing apparel, that is, a garment such as a vest or petticoat of cloth, or head-dress or vesture [1] of silk, or a red boot.

Should the deceased happen to be one of the chiefs or of the richer class of the tribe, the expenses incurred by his people for food, drink, coffee and tobacco, sometimes exceed one hundred and fifty *líras*. Among their customs also is the following:—When news of a death reaches the neighbouring Arab families, each family repairs to the tent of the deceased to offer their condolences and take with them sheep and goats for slaughter which they term *ḳaydah*.[2]

[1] The word is ظهر, which I do not find in any dictionary, and is not noticed by Dozy in his "Dict. des noms des Vêtements chez les Arabes."

[2] I transliterate with diffidence: the vowel-points are not given and the word

On arrival at the house of the deceased, all the animals that have been brought are killed, even to the very last, and are served up to the mourners upon dishes of *burghul* over which the butter flows liquid as water and the mode of eating is by pressing the food into balls, as is the custom on festive occasions. Another of their customs is that the women who are blood-relations of the deceased, such as his sister, his daughter, his wife or the wives of his brothers and uncles, tear their cheeks with their nails till the blood flows and rend their garments and throw dust upon their heads. Another custom is to let their hair loose over the face and shoulders. After the lapse of six months, the men and women of the tribe assemble at the house of the deceased and mourn for him during the day, at the close of which they visit the grave, and this ceremony is also performed on the anniversary of the death. The animals slaughtered after the interment of the deceased are called "a solace to the deceased."

Hostile Incursions.

By the word *ghazw* is signified the hostilities of Arab tribes against each other. When one tribe intends a foray against another, the Shaykh of the tribe warns the whole of his clansmen three days previous to the expedition. Upon this their leaders meet at the Shaykh's house, who, after performing the duties of hospitable entertainment and furnishing the horses with provender, thus addresses them,—"O chiefs of the Arabs, I have certain information that such and such a tribe of Arabs is encamped at a certain spot, and their gathering is extremely small and we mean to attack them after three days. Therefore warn your people to be in readiness, and at the appointed time let the horse assemble in such and such a district, and at such and such a spot."

Thereupon the leaders quit their chief, each one departing to his own party, and when they reach their tents, each of them assembles his men and entertains them and after the entertainment he addresses them as follows:—"We intend to attack such and such a tribe, at such and such a spot, on a certain day, and all the horsemen must be there assembled." The men then severally depart to their tents and every horseman must provide the requisites for the march in food and water for himself and his horse and the needful amount of barley for his horse, and on the appointed day, the horse assemble in one body, every horseman having his things laden on a camel and each camel led by a picked

is unknown to me in this sense, though *Ḳaud* (قود) and *Ḳádat* have the meaning of a present or contribution of horses or camels, either as gifts or in token of vassalage.

man of its owner's relations; these camels are called by them *rakb* (camel-troop). The leader of the whole expedition is the Shaykh of the tribe, whom all obey. When the whole force is assembled, the Shaykh thus addresses them: "Ride forth, O horsemen, and you, O camel-drivers, go to a certain spot and there await the horsemen till they come to you." Upon this the horsemen set forth, making for the enemy's cattle where they may be grazing on the plain, and the camels march to the appointed place and lie in concealment. Let us now turn to the horsemen.

When they arrive within six or seven hours from the habitations of the enemy, the horsemen lie in ambush in a certain defile. A detachment of about ten of them then set out and march on till they near the enemy's tents and lie in ambush during the whole day and night, and in the morning they watch the direction taken by the cattle and the herdsmen to pasture. And as cattle must necessarily be sent with the drover to the plain, as soon as the horsemen on the look-out observe the herd leaving the tents for the pasturage, the detachment make for the ambush of their own people to give them notice that the cattle are moving towards a certain quarter. Upon this the Shaykh rides with the whole of his force after the cattle, having, as they put foot in stirrup, uttered some such words as, 'May God provide for our families!' When they arrive within an hour's distance of the cattle, they scatter in pursuit and collect all the cattle together and drive them forward in front of their horses. It is not long before the news reaches the owners of the cattle, who mount their horses to save their property from the hands of the enemy. Sometimes the pursuit by these horsemen of those of the enemy continues a whole day or more, until the one body overtakes the other, when the scales of fray and contest are balanced between the two forces. Should the owners of the cattle prevail, they recover the plundered camels and sheep and return with song and chants of victory and triumph and their women come out to meet them an hour's distance from the encampment with dance and pæans of joy. We shall now describe a few incidents of their skirmishes and attacks and the customs they therein observe. When a horseman overtakes another and wounds him with his lance or sword and hurls him from his horse to the ground, the latter calls to his overthrower: 'I am under thy protection; spare me, as may God spare thee.' The victor then dismounts from his horse and binds his fallen adversary, driving him in foot in front of him after despoiling him of his weapons, and remounting, leads the horse of his captive behind him till he reaches his own people. He then digs a pit in the ground before his tent, about a yard in depth,

and places his captive in it and fills it up partially with earth and sets a covering over the pit. The feet of the captive are, meanwhile, fettered with iron, and every day he is given a little food and he is also daily taken out of the pit for about an hour for the usual necessities of nature. As often as he goes beyond the tents, his arms are pinioned and he is guarded by an armed man. When his needs are satisfied beyond the encampment, he returns with his guard behind him, who sets him in the pit as before. Sometimes the prisoner dies under this treatment and at others they take pity on him and set him free. But if another war breaks out between the two tribes, and the man captured again falls into their hands, they strike off his head at once without mercy. Another custom is the following; when one horseman meets another on the field of battle and cuts him down, the other cries out, "Spare me, as may God spare you: this shall be to me as a day of the days of the Arabs."[1] Upon this the victor stays his stroke from his suppliant enemy and exclaims, 'God has given thee life; go in peace and this shall be to thee as a day of the days of the Arabs." But if in subsequent hostilities between the tribes, the vanquished horseman is victorious and the one who had previously given him quarter or any of his relations falls into his power, he spares them and does not in any way molest them. This conduct is called by them an interchange of courtesy, but the honour rests with the first.

The narrative must now revert to the "RAKB," that is to the men before-mentioned, who were leading the camels and were in hiding with the water, provisions and fodder for the horses, awaiting the arrival of the foragers. These, whether successful or otherwise, must necessarily pass the camel-troop expecting them, and as soon as the horsemen arrive, the former mount their beasts. If the horsemen are driving their booty before them and the owners of the cattle are in pursuit to recover the cattle and the fight is going on, (they join)[2] against the enemy. Sometimes the defeat of the enemy is due to the camel-riders. But if the horsemen reach the camel-troop in defeat and not victorious, the latter accompany the horsemen returning to their people. Another of their customs is as follows: should the horsemen be returning from the foray with their booty and meet a man or a woman, the traveller, whether man or woman, will look towards the leader of the horsemen and say, "Brand the foot," and he will reply, "Welcome, welcome."[3] Thereupon the man will say to the Arab Shaykh, the leader

[1] The word "day" in this sense signifies a day of battle, and the "days of the Arabs," the recital of their engagements.

[2] These words are omitted and the ellipse mars the sense.

[3] In the text أهلا و رحب for أهلا و مرحبا.

of the horsemen, "A share of the plunder, a share of the plunder;" upon which the leader will order a portion of the booty to be given him, whether of camels or of sheep. Sometimes the man's portion may be from one to ten camels, according as the plunder was much or little, and so likewise of the sheep. Another custom is this: should the expedition be successful in the capture of booty and carry it away, and the herds[1] that are harried belong to one or two individuals and not to the tribe in general, the whole tribe assemble and ascertain the number of camels that have been taken and collect of their own a number equal to that plundered, and give it to them in place of their camels. The share of the leader of the foray is customarily five times the amount allotted to individual horsemen. The remainder is divided equally between the cavalry and the camel riders without distinction of persons.

These customs are common to all the tribes.

Some Usages of Law.

The Judges among the Arabs are plain, blunt men, unable to read and write, inheriting the office from father to son. They settle the claims of litigants with prompt decision, giving to each one his due; and in my opinion the regular judges versed in the science of jurisprudence, fail in effecting what is accomplished by these uncivilised tribunals.[2] And here I will cite some instances of their decisions, arrived at by the exercise of common sense and not by the aid of treatises on law. Two married brothers in poor circumstances once lived in the same house, and it happened that both their wives were delivered on the same day, one giving birth to a boy, the other to a girl. While the mother of the boy was asleep, her sister-in-law, the mother of the girl, arose, and going to her bed took the child from her side and placed her own girl in its place. Now it is a custom among the Arabs to swathe their infants for some days and not to remove their bands. In the evening of the same day, when their husbands returned from pasturing their herds, each of the wives said to her husband:—"Good tidings, husband, I have been given a boy." Now the boy's real mother was aware that her sister-in-law had been delivered of a girl, and straight-way unswathing the child by her side, she discovered

[1] عصي plur. of عصا, literally, a shepherd's staff, and derivatively a flock of sheep (generally 400), committed to his charge. *v.* Dozy. Art, عصو. Here it is used synonymously with رعية, a herd of grazing camels.

[2] The Ḳázi el Arab observes Burton, was almost always some sharp-witted grey-beard, with a minute knowledge of genealogy and precedents, a retentive memory and an eloquent tongue. Mecca, iii. 45.

that it was a girl and not a boy: upon this she told her husband that she had brought forth a male, and her sister-in-law a female child, whereas now she found the female with herself and the male by the side of her sister. A contention arose, therefore, among them till the matter was carried to the Shaykh of the tribe, who directed them to proceed to the Ḳáḍhi who should judge between them. They presented themselves before the Ḳáḍhi and stated their case. The Ḳáḍhi thereupon ordered that a determinate measure of milk should be taken from the breasts of both the women, and he then weighed the milk of the one against the other in accurate scales. The milk of the boy's mother weighing somewhat heavier than that of the mother of the girl, he decided that the heavier milk belonged to the mother of the male child. He added that if they would not accept this decision, he would be compelled to put it to the test of the louse. Now lice are very common with the Arabs, and his intention was to place some of the milk of the male-child in a dish and to put a louse in the middle of it, whence it would not be able to extricate itself from the milk of the male owing to the presence of greater viscidity than is found in the milk of the female. Whereas if the louse be set in the milk of the female child, it will crawl out without difficulty, from the absence of this viscous matter. After the decision was given, an investigation and a close enquiry proved that the male child was stolen from his mother and in accordance with the sentence, the boy was restored to his true mother and the girl to hers.

A Second Instance.

A man married two women. One proved barren, the other not so. The latter gave birth to a son, for which reason her husband preferred her to the other. A violent jealousy took possession of the rival wife and she concealed in her heart a determination to destroy the child and she watched a favourable opportunity to commit the evil deed. One day, when the boy's mother set forth from the house to collect camel's-dung in the desert, the wicked woman placed her hand upon the child's mouth and nose and suffocated it. When the child's mother returned she found her son dead and the body turned blue whereupon she set up a shriek and kept wailing, "Alas, why hast thou done this to me," and a clamour arose between them, each wife's people taking her side and the altercation became violent till a war was imminent between them. At this juncture the chief arrived and quieted the tumult and ordered them to go before the Ḳáḍhi to decide between them. They duly presented themselves and set forth their plaints. The Ḳáḍhi called the mother of the boy aside and said to her,—"I know that thy wicked

rival has killed thy son through envy. Now I require thee to do a thing, to which if thou consentest, I will lay the charge of murder against thy rival and her relations." The woman replied,—"What is it thou requirest of me?" He answered, "Go to the farthest end of the encampment and take off thy garment and wrap it round thy head so that thy shame be seen before all the Arabs, and walk from the end of the camp to this tent without any covering on thy body, after which I will decide in thy favour." The woman answered,—"No, my lord, I will not do this; rather will I forego the vengeance for the blood of my child and preserve my honour among the Arabs, or I shall lose both my child and my honour. I will never do this; never, never." The Ḳáḍhi replied—"Retire and rest in the women's apartment." He next called the other wife aside and said to her,—"I require thee to do something, which if thou dost, I will absolve thee from this crime." She replied. "I am at thy orders; what dost thou wish me to do?" He rejoined, "Thou must take off thy garment and wrap it round thy head," &c., as he had spoken to the rival wife. She answered at once: "This is easy, I will do it with willingness on condition that thou acquittest me." He said to her,—"Go to the end of the encampment and gird up thy garments and run through the midst of the Arabs, from thence hither, that all may behold thy shame and I will acquit thee." Upon which she set forth; whereupon the Ḳáḍhi summoned a respectable man and said to him, "Go after this woman to the end of the tents and if thou seest her uncovering her person, make her put on her garments and forbid her and bring her hither." The man did as he was ordered and after this, the Ḳáḍhi decided that the blood of the child should be demanded of the wicked woman. Some of the tribal chiefs objecting to sentence being passed against the woman in a crime of this nature without evidence, he replied that a woman who would sacrifice her reputation and immodestly uncover her shame before all the tribe, would undoubtedly be capable of so base a deed. They answered that his sentence was just, and she was condemned to death by strangulation, such as she herself had perpetrated with her own hands.

A Third Instance.

A number of persons were suspected of the murder of a traveller on his journey, but it was not known which of them was guilty of the crime. The relatives of the murdered man prosecuted five of them, from the knowledge that feelings of enmity had existed between them and the deceased, but they were not able to say definitely that *this* particular individual had killed *that*. When they appeared before the judge and he interrogated them searchingly, he found that all of

them repudiated the charge and as there were no witnesses to prove the case against any particular person, he declared that he would bring the criminal to justice in six months. After the lapse of the six months, the Ḳáḍhi requested the chief of the tribe to assemble the people on a large plain and place them side by side with their hands folded upon their breasts in the form of a cross. The chief told them in a loud voice that the Ḳáḍhi desired to whisper something to them, to which they should listen. Upon this the Ḳáḍhi whispered in the ears of all of them saying, "I wish to say but two words only, and when I speak them everyone who keeps his arms crossed on his breast, shall receive from the Emir a present of a horse, a sword, and a spear. Do you accept this condition?" he added. They all assented, and the Ḳáḍhi with the Emir and the other chiefs in attendance, stood before the assembled crowd, while the Ḳáḍhi thus exclaimed in a loud voice: "O, Arabs! I know that he whose fillet of rope[1] shall fly off his head, is the murderer of Ibn u'l Badín," (the name of the murdered man). Before the Ḳáḍhi had closed his lips, a man raised his hand to his head and felt his band. Thereupon the Emir, the Ḳáḍhi, and the chiefs came forward and laid hold of him, and he, after much questioning, confessed that he had killed the unfortunate man with his own hand.

Their Oaths.

The Bedouins constantly make use of oaths in their conversation. They cannot string a sentence together without *bi'lláh* or *ta'lláh* frequently reiterated, or *Ṣalát-Muḥammad.* These words are used in adjuration whether they speak truly or falsely, which makes no difference to them. But the oath which they regard as reliable and which they employ in their tribunals, and in important cases, is the following:—"By the staff and the adored Lord, and the geomancy[2] of Solomon, the son of David." Before taking this oath, the man grasps a staff in his hand and describes therewith a circle upon the ground in front of the bystanders, after which he takes this oath before the company, who thereby become witnesses against him. When they appear before the Ḳáḍhi in any important case, and the point is to be decided by oath, the Ḳáḍhi addresses him saying, "Say, O Bedouin, by

[1] This is the band of rope (*ʿiḳál*) which serves to fasten the *kúfíyyah* or kerchief of cotton or silk, which the Bedouin wears round his head. Burton transliterates this word incorrectly, as *Aakal*, in his El. Misr. I., 346. ed. 1855.

[2] خط or علم الخط, equivalent to علم الرمل or geomancy.—These are lines made in sand, and even on paper, by the diviners; an ancient practice, according to Lane, still carried on at the present day, and employed to discover secret thoughts and things unknown and the like.

the stars and the planets, and the heavens and the earth." On his pronouncing these words before the assembly, the indemnity is paid, and the case is decided without further contention or dispute. They also employ other words, such as—"By the tomb of Ísa and of Músa." Such are the expressions they make use of in their oaths and asseverations. They pronounce these words in all their dealings with each other, and if one should borrow of another, the lender is satisfied with the oath alone without the written bonds customary among civilised communities. Experience shows that they keep due faith with each other and it is rarely that any differences arise between them. Praise be to God who has made them contented with their simple institutions!

Supplement to the Observations on Marriage.

When the dancing and singing and the ceremonies previously mentioned are over, the bridegroom rises to his feet, and rushes quickly through the women, taking any that may come on his way to the apartment occupied by the bride. He then strikes the bride with a staff, bruising her head, in the belief that he thereby acquires power over her and that she will never dispute his authority as long as she lives. Another custom is as follows: when the song and dance are over as above described, they make the bridegroom stand at the door of the bridal apartment, while two vigorous youths come up behind and push him with all their force. Should he fall on his face, they make merry over him and do not suffer him to marry that night, but if he does not fall, they depart to their homes and only his near relatives remain with him and the ceremonies are concluded.

Supplement to the Observations on Mourning.

When the mourning ceremonies are concluded, as above-mentioned, they carry the corpse upon wooden boards, as is customary with people in the towns. As they proceed and pass by any tent on their road, they feign inability to advance as if the deceased were dragging them by force to the tent they are passing, and so they carry him to it. The master of the house brings out for the corpse a vesture, a jacket or cloak, such as he may happen to possess, and this takes place from tent to tent till they reach the cemetery. They then bury him and return home after washing their hands upon the grave. This is done by one of the men present taking a ewer, while the rest step forward one by one to the grave and wash their hands, invoking the mercy of God upon him. They believe that the soul continues to abide in the left ear, and that the deceased hears all that is said to him whether prayers or aught else.

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NOTES ON ANTHROPOLOGY.

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CHAPTER I.

THE PLACE OF MAN IN NATURE.

In the first attempt to classify the animal kingdom, Linnæus placed men and monkeys side by side in the order of mammals which he designated Primates. In our own time there has been much discussion of the question whether the differences between the two correspond to the distinction between an order and a sub-order. Owen thought he had proved that in man alone the lesser brain is completely surpassed in size by the larger; but his theory, which would have given to man an indisputably higher structural rank than the most advanced apes, is now generally admitted to have been based upon erroneous observations.

Even the standard distinction between man as an animal with two hands, and apes as creatures with four, has been swept away by recent

investigations. Professor Huxley* has shown that in all important relations of number, arrangement and form, the tarsal bones of the gorilla resemble those of man. The only difference is, that in the gorilla the metatarsal bones are relatively longer and more slender, while the great toe is comparatively shorter and weaker, and along with its metatarsal bones is joined to the base of the foot by a looser and more pliable joint. But although the gorilla's hind member must be admitted to be structurally a true foot, its functions differ from those of the human foot, and this fact alone raises the morphological status of man far above that of the highest apes. Status in this sense depends upon specialisation of function. The more purposes a given member has to discharge the lower is its morphological rank. Thus a man's foot can only be used for walking; while a gorilla's foot, although a true foot in virtue of its anatomical character, is also a prehensile organ and therefore less specialised and of a lower type. Apes walk either on the outside edge of their feet, or, like the ourang-outang and chimpansee, on the upper surfaces of their toes, which are folded down when the erect position is assumed.† Differences of habit again lead to modifications of structure. The upright position leads to the shortening of the arms, which are no longer used for locomotion, though they retain their power of prehension, and causes the pelvis to asume the dish-like form adapted to support the intestines. The relatively capacious skull is evenly balanced on the vertebral column, and if, as is the case with the Negro, the jaws project greatly, the correlative development of the cerebellum serves to maintain equilibrium.

Embryological differences must not be left out of consideration. Eighty years ago Johann Friedrich Meckel, of Halle, discovered that during the period of immaturity, which lasts from the fertilization of the ovum to the first manifestations of sexual aptitudes, every animal passes through all the various stages of development which characterise the lower forms of life during their whole existence. At birth the difference between the human infant and the monkey is comparatively small. It takes an expert to distinguish the skull of a child from that of a chimpansee. In point of size there is little to choose; but an ape's brain does not grow much. Although it resembles the human brain in structure, its development follows quite a different course. The brain of the ape has, as a rule, stopped growing by the time the animal has got its second set of teeth, which is just the time when the real development of a child's brain begins. *Per contra*, the facial bones of the ape grow more rapidly, so that the biggest monkeys have the brain of an

* Huxley, *The Place of Man in Nature*, p. 105.

† Darwin, *Descent of Man*, i, p. 120.

infant combined with the jaws of an ox. So also the inter-maxillary bone disappears earlier in the human embryo than is the case with monkeys. It follows from all this that continued development can never turn a monkey into a man, for the evolution of the two types goes on in different directions, and the degree of divergence would therefore tend constantly to increase. In some of the lowest monkeys, whose development has been arrested, as is the case with the marmoset of Eastern Brazil, the brain-case approaches the human type more closely than that of the anthropoid apes.* It is therefore a vulgar error to suppose that the evolution hypothesis traces the descent of man to one of the four higher varieties of apes. Neither Darwin nor any of his followers have ever said anything of the kind, but have always maintained that the ancestors of the human race must have diverged from some long extinct variety of the catarrhine group in the early part of the tertiary epoch. In order to verify this hypothesis intermediate forms must be discovered connecting the eocene apes with the men of the present day. The chain of structural modification will then be complete. This missing link, however, will probably be found, not in Europe, which man seems first to have entered after his present stage of organization had been reached, but in Asia or Equatorial Africa, regions more likely *primâ facie* to have been the cradle of the human race.

We have spoken thus far only of physical characters, which entitle man merely to rank in the animal kingdom as a sub-order of the Primates. These are what determine his place from the scientific point of view, which is all that we are now concerned with. In the later papers we hope to deal with some of the higher distinctions between men and animals.

In illustration of the different phases through which the question has passed the most notable classifications of men and monkeys are shown below.

Order of Primates.

Linnæus—1735.

1st *genus.* Homo
- *Species sapiens*
  - Ferus, (savage)
  - Americanus
  - Europæus
  - Asiaticus
  - Asser (negro)
  - Monstruosus (abnormal)
- *Species sylvestris or troglodytes:* Orang, etc.

2nd *genus.* Simia.

3rd *genus.* Lemurs.

4th *genus.* Vespertilio.

* Virchow, *Menschen und Affenschädel*, p. 25.

Cuvier—1828.

1st *order.* Bimana: Man.
2nd *order.* Quadrumana—
1st *family.* Monkeys. { 1st *tribe.* Monkeys of old world. 2nd *tribe.* Monkeys of new world.
2nd *family.* Marmosets.
3rd *family.* Lemurs.

Huxley—1871.

1. Anthropidæ: Man.
2. Simiadæ { Catarrhine { Anthropomorphic. Cynomorphic. Platyrrhine Arctopitheca.
3. Lemurs.

Broca—1870.

1st *family.* Man.
2nd *family.* Anthropoids (chimpansee, gorilla, orang, and gibbon).
3rd *family.* Pitheca (semnopitheca, or sacred monkeys of India).
4th *family.* Cebia.
5th *family.* Lemurs.

Broca—1877–1880.

1st: Anthropomorphi { A. Man. B. Anthropoid.
2nd: Monkeys { C. Pitheca. D. Cebia.

According to Huxley, the different races of mankind fall naturally into two primary divisions: the *Ulotrichi*, with crisp or woolly hair; and the *Leiotrichi*, with smooth hair.

Among the *Ulotrichi* the colour of the skin ranges from yellowish-brown to the deepest charcoal-black. The hair and eyes are almost invariably dark, and the entire group, with the exception of the Andamanese, is dolichocephalic. The Negroes and Bushmen of Africa, and the Negritos of the Malay region, and of the Papuan islands belong to this stock. Some writers have proposed to include the Dravidians of India among them, but it may be doubted whether the physical characteristics of this type have yet been determined with sufficient certainty to enable the question to be finally settled.

The *Leiotrichi* or smooth-haired division are further divided into four groups:—

1. *Australioid* with dark skin and eyes, wavy, black hair and long prognathous skulls with well developed brow ridges. The Australians

are the chief representatives of this type, and Huxley also includes in it the inhabitants of the Dekhan and the ancient Egyptians. As regards the people of the Dekhan a doubt may be suggested, whether the data available are ample enough to justify this conclusion. One may also fairly ask what is meant by the phrase inhabitants of the Dekhan. Presumably the Dravidians, but the category is so large and indefinite that it may well give rise to some misapprehension. One is tempted to surmise that the people of the Dekhan have been included in this type on the strength of an examination of a limited number of Museum specimens, about the least trustworthy kind of evidence that can be resorted to. No one who is acquainted with the conditions which govern the collection and preparation of skulls in India, can fail to regard with profound distrust any of the ordinary collections; for the simple reason that in nine cases out of ten there is, and from the nature of the case can be, no guarantee whatever that the skulls are what they are represented to be. Pending therefore the fuller examination and determination of the Dravidian type, which may perhaps be looked for, we may be permitted to suspend judgment on the question whether it should be included in the Australioid group.

2. Next in order comes the *Mongoloid* group, with usually yellowish-brown or reddish-brown skins and dark eyes, the hair being long, black, and straight. The characteristic Mongolian skull is brachycephalic; in fact the most pronounced cases of brachycephaley are found among this group, and all Asiatic Mongols are markedly brachycephalic. On the other hand, the American Mongols are usually dolichocephalic.

3. The *Xanthrochroic* group is marked by fair skins, blue eyes, and abundant fair hair. The skulls of the most typical members of the group are almost invariably dolichocephalic, indeed Penka (*Die Herkunft der Arier*) regards this as one of the chief characteristics of the Xanthrochroic Scandinavians; but in Southern Europe the brachycephalic representatives of the type out-number the dolichocephalic. Teutons, Scandinavians, Slavonians, and the fair Celts are the chief members of this group; but distant off-shoots are also found in North Africa and Western Asia.

4. The *Melanochroi*, or dark whites, have pale complexions, dark hair and eyes, and usually long, but sometimes broad skulls. In Europe they are represented by the Iberians and "black Celts" of Western Europe. Professor Huxley is inclined to think that they are not a distinct group, but result from the mixture of Australioids and Xanthrochroi.

On Some Superstitions regarding Drowning and Drowned Persons.—By Babu Sarat Chandra Mitra, *Pleader, Judge's Court, Chupra.*

Anthropologists have come to the conclusion that the principle of Animism has its origin in the belief that every locality has its presiding spirits. This stage of belief is a characteristic of savage races and still survives as a relic of primitive faith among peoples who have now become civilised. Primitive men believed every mountain, rock and valley, every well and stream and lake, to be the abode of some spirits. This belief again originates from the association of the idea of personal life with that of motion, just as the swaying of a tree appears to the mind of primitive man to be a proof of personal life like the flight of birds or the movements of animals. This idea became gradually developed and, in conjunction with dreams during sleep, reminiscences of the dead and accidental associations of motionless objects with motion (as of a rock in the midst of a rapid or eddy) gave rise to Animism or Spiritism. Primitive man was awe-struck at the majesty and grandeur of a mountain and, inwardly reflecting that this must be caused by spirits or beings superior to himself, believed the mountain to be the local habitation of these beings.

Relics of savage Animism are still to be met with among civilized races: such as the mountain-worship of the Japanese, the well-worship prevailing in the different counties of Great Britain and Ireland, and the river-worship of the Hindus. The Ainos, who are the aboriginal inhabitants of Japan, profess "the rudest and most primitive form of nature-worship, *attaching a vague sacredness to trees, rivers, rocks, and mountains*, and vague notions of power for good or evil to the sea, the forest, the fire, and the sun and moon."* This belief still survives among the modern Japanese who worship mountains. Miss Bird says (page 108 of Vol. I of her work): "Mountains, for a great part of the year clothed or patched with snow, piled in great ranges round Nantaisan, their monarch, are worshipped as a god." At page 122 of the same volume, she again says: "The mountain-peak of Nantaisan is worshipped, and on its rugged summit there is a small Shinto shrine with a rock beside it on which about one hundred rusty sword-blades lie—offerings made by remorseful men whose deeds of violence haunted them till they went there on pilgrimage and deposited the instruments of their crimes before the shrine of the mountain-god."

In the same manner, primitive man believes that every river has

* Miss Bird's *Unbeaten Tracks in Japan*, Vol. II, page 94.

its presiding spirit, and instances of this belief are still to be met with among peoples of savage culture. The Tshi-speaking peoples of Africa believe in a great spirit Prah who presides over rivers and to whom they offer human sacrifices—one adult male, and one adult female—in the belief that the spirit can do harm to the people through the agency of the rivers. By the principle of substitution, offerings of flowers, fruits, sweets, cereals, and incense which the Hindus of Bengal offer every year to the Ganges, Brahmaputra, Padmâ, Nerbudda and other rivers, have taken the place of the human sacrifices which are offered by savage peoples to the great River-Spirit.

Traces of the belief that every river, sea, and other bodies of water have presiding spirits, and that they require human sacrifices, are to be found even at the present day in the shape of various superstitions about drowning and drowned persons which are prevalent among civilized peoples. Hence the reluctance displayed by some peoples to save a man from drowning if he falls into the river or the sea. In the Solomon Islands, when a man falls into the river and is attacked by a shark, he is neither helped out of the water nor is he assisted in warding off the attack of his marine assailant. If the person any how manages to escape from the jaws of the shark, his fellow-tribesmen throw him back into the water so that the shark may make a meal of him. This they do under the impression that the victim is destined to become a sacrifice to the river-god.* Another form of this antipathy to saving a drowning man obtains in Scotland and has been recorded by Sir Walter Scott in "*The Pirate.*" In that story the peddler Bryce refused to assist Mordaunt in saving the life of the shipwrecked sailor from drowning and even rated him roundly for attempting to do such a thing. I will reproduce the conversation which took place between the two, because it shows the motive for not assisting a man from getting drowned. Bryce said, "Are you mad, you that have lived sae lang in Zetland, to risk the saving of a drowning man? Wot ye not if ye bring him to life again, he will be sure to do you capital injury?" The origin of this belief is stated by some to be the idea that the person rescued from being drowned will, some day or other, do a mischief to the man who saves his life. Others say that it has its foundation in the belief that, as rivers and seas are entitled to human sacrifices, the presiding spirits of those bodies of water will wreak their vengeance on those who prevent them from getting the victims, as is illustrated by the item of folklore from the Solomon Islands or by that prevailing in the Orkneys and Shetlands. It is said

* Codrington's *The Melanesians*, page 179.

that "among the seamen of Orkney and Shetland it was deemed unlucky to rescue persons from drowning since it was held as a matter of religious faith that the sea is entitled to certain victims, and if deprived would avenge itself on those who interfere."*

The superstition that the water-spirit, if despoiled of his victim, will wreak vengeance on the person who deprives him of the sacrifice due to him, is prevalent, in one form or another, among many races in various parts of the world. It exists among the sea-faring population of Great Britain and Ireland and especially among those of Cornwall. The sea-faring community of France, the boatmen who ply their vocation on the River Danube and the common peasant folk of Russia also share in this belief. Formerly a superstitious belief was current amongst the Bengalis that a water-spirit in the form of an old hag—called জটেবুড়ী—haunts tanks and ponds, and when any person goes thereto, she fetters that person's feet with an invisible chain. The victim is allowed to go wherever he likes, dragging the invisible chain, long as the daylight lasts, but as the shades of evening begin to fall, the জটেবুড়ী begins to withdraw the chain, and, therewith, the victim is gradually drawn into the waters of the tank and drowned. This superstition, is now fast vanishing before the progress of English education and enlightenment and now only lingers as a relic in the threat with which Bengali infants are frightened, namely, that, should they become naughty, the জটেবুড়ী will catch them and take them away. Another mythical being, named জখ, was believed to exist in Bengal formerly. It was supposed to guard hidden treasure and to reside in tanks. It was also said of this being that if anybody went to take the treasure in charge of the জখ, he was dragged into the water by that spirit and killed by being submerged in it. This bit of folklore is also disappearing. The Siamese believe in a water-spirit called Pnük, who, they say, seizes those who go to bathe in the water and drags them down. The Sioux Indians entertain a similar belief in a water-demon whom they call Unk-tahe and who, they believe, kills men by dragging them underneath the water in a way similar to the Siamese Spirit. The Kamschatkadales refuse to help a drowning man out of the water, on account of some similar superstitious scruples. If such a man was anyhow rescued, no one of his fellow-tribesmen would allow him to enter his house or give him food, but, on the other hand, would take him for one who is dead. The Chinese also display a similar sort of reluctance to save a drowning man because they believe that the spirit of the drowned man hovers over the water till it succeeds in

* Tudor's *Orkney and Shetland*, page 176.

killing a fellow-creature by dragging him underneath the water and drowning him. It is also popularly believed by the Hindus of Bengal that the spirits of persons who have come by their deaths from drowning, haunt the tanks and wells in which they have been drowned. Persons are afraid of going to such tanks and wells after nightfall, from a superstitious dread that the ghost of the drowned man would be sure to appear to him, or some other evil would happen to him. The waters of such tanks and wells are considered impure and unclean until those receptacles of water are reconsecrated and thus rendered pure, by performing some होम or sacrifice, or some *Jagna*. Like the Bengalis, the Japanese also consider the water of wells wherein persons have been drowned as impure. Miss Bird, at page 184 of Vol. I of her above-quoted work, says: "I have passed two wells which are at present disused in consequence of recent suicides by getting drowned in them." There is a belief current among the people of Bangalore in Mysore, that the spirits of those persons who have been drowned possess women.*

There are some omens which are superstitiously believed to prognosticate death from drowning. Before the days of the Suez Canal, when ships used to come to India by the route round the Cape of Good Hope. European sailors believed that a "Phantom Ship," which they called the "Flying Dutchman," used to sail near the Cape and would appear to passing vessels in times of storms. Sailors believed that the vessel which sighted the "Phantom Ship" would surely come to grief, and all the crew on board the vessel would be drowned. Captain Marryat has founded the plot of a novel upon the legend of the "Flying Dutchman." There is a superstition in Bengal among the lower classes of Bengalis, that if a single female goes in a boat in which there are male passengers only, the boat would come to grief and the passengers drowned. In order to obviate this evil, the single female passenger must tie a knot in her cloth and must call to mind the name of another female. I once saw a curious illustration of this superstition. In May or June 1884, I had occasion to go over to Seebpore on the other side of the River Hooghly. I hired a boat from the Colvin's Ghat, Calcutta, and was crossing the river. While in midstream, the wind began to blow a regular gale, and the boat was tossed to and fro. My fellow-passengers assured me that the rough weather was the consequence of the presence of a single female who was a passenger in the same boat with us. On a previous occasion also, while going to Seebpore, I was accompanied by a single female—a relative of mine, and, when stepping into the

* "Note on a Mode of Obsession, which dealt with the Belief in a part of Bangalore in the Possession of Women by the Spirits of Drowned Persons" by F. Fawcett, in the *Journal of the Anthropol: Soc: of Bombay*, Vol. I. No. 8.

boat, I saw her tie a pice in a corner of her cloth, mentioning the name of another female, as there was no other female passenger in that boat. This she did to obviate the consequences of the popular belief that a boat with a single female passenger would come to grief. There are also the Bengali superstitions that women who have got children must not put water into a vessel containing lime, after taking their meal, otherwise their children will get drowned.* Also a person who dreams that he is drowned in mire, ought to know that such dream prognosticates an early death to him.* The Bengali Hindus also believe that those persons who have got convolutions of hair (peculiar growth of the hair in a spiral form, which is called in Bengali चुक्कीरपाक), are sure to get drowned. I came across a curious instance of this superstition lately. In the beginning of August last, a nephew of a Bengali pleader of the Chupra Bar got drowned while bathing in the River Saraju which flows past that town. While on a visit of condolence to the bereaved gentleman, another Bengali gentleman—also a pleader of the local bar—asked one of the uncles of the drowned boy whether the deceased had got a convolution of hair on his head. On being informed that he had got one, the gentleman told us all, that since the deceased had such a convolution of the hair, he was sure to have died by drowning. The aforesaid gentleman also informed us that his second son had also got a similar convolution of hair, and that he was afraid lest he should also get drowned. He further told us that, in consequence of his son's possessing such a convolution, he did not allow him to go to bathe either in a tank or in the river.

There are also certain processes which, if had recourse to, would prevent a person from getting drowned. The performance of certain religious ceremonies is also supposed to have the same effect. Sailors believe that if a portion of the caul which covers the face of some children at the time of birth, be worn as an amulet round the neck, the person wearing it will not get drowned. In Bengal, it is sometimes believed that if a person accidentally eats ants along with sweets or other eatables, he will not get drowned. When a person is about to go to a distant part of the country and will have to cross rivers, the Hindus of Bengal, previous to the starting offer pujas to the goddesses of the rivers Ganges, Brahmaputra, Padma, Nerbudda, &c., &c., so that no mishâp may occur. In our own family at Calcutta, I have observed similar pujas offered to the family idol Nârâyaṇa (who in this case is supposed to represent those river-goddesses), before any member of the family undertakes a journey

* *Vide* items Nos. 150, 155 and 189 in paper "On Popular Superstitions in Bengal," published in the *Journal of the Anthrop: Soc: of Bombay*, Vol. I., p. 354.

to a distant part wherein he will have to cross rivers, simply for the purpose of appeasing the river-goddesses who will, therefore, preserve him from all accidents in the rivers. The Bengali boatmen cry "*Badar, Badar*" when a boat is in danger of capsizing, in the belief that doing so would cause the vessel to reach its destination safely. The Ainos, who are the aborigines of Japan, believe that if they throw the images of their gods, which are nothing but wands and posts of peeled wood, whittled nearly to the top, from which the pendent shavings fall down in white curls, into rivers, streams, rapids and other dangerous places, they will be able to cross them safely.* The Japanese worship a god who, they believe, saves men from drowning and accident. They have also an amulet which saves persons from drowning. Miss Bird says, "The amulet which saves from drowning is a certain cure for choking, if courageously swallowed."† The Kakhyens of Burma worship a Nat called the *Khakoo Kha-nam*, the god of water—on the occasion of anyone getting drowned. They also worship another Nat named the Ndong Nat (Aing-peen Nat of the Burmese)—the God of the Outside of Home, who, they believe, resides in the house, but *is worshipped by them outside if one of the family is killed by drowning.*‡ The Mahommedans, when undertaking journeys by water utter, as a protective from drowning, the following formula which is contained in *Surah Nooh* of the Koran:—

بسم الله مجريها و مرسها ان ربى لغفور الرحيم

The whole may be transliterated in Roman characters thus: "Bismillâheh majrihâ o mursâhâ innâ rabi-il-ghafur ur-rahim." The origin of this custom is contained in the following legend which runs thus narrated in Urdu:—

قصه طوفان حضرت نوح عليه السلام كا مشهور هى برمختصر يه هے كے طوفان شروع هوا حضرت نوح عليه السلام هر ايك جانورون كا ايك ايك جوزا اور يهان سے رفيقون كے ساتهه كشتي مين سوار هوے باقي لوگ حتى كه ايك لڑكا حضرت نوح كا بهي به سبب نافرماني كے غرق هوا تمام روے زمين دريا هوا درختون اور پهاڑون سے چب چاليس گز پاني بالا هوا اهل كشتي شدت باد اور كثرت افواج سے بد حواس اور زندگي سے مايوس هوے حكم الهي هوا بسم الله مجريها و مرسها ان ربي لغفور الرحيم جو كوئي ورد زبان كريگا حق تعالى اوسكى سب مشكلات آسان كريگا الله تعالي نے اپني اسم كے بركت سے اونكى دوبنى سے اور طوفان موقوف هوا *

The legend in Urdu may be thus translated into English:—

"The story of the Deluge of the Patriarch Noah—on whom be peace—is well-known. The long and short of it is that when the Deluge

* Mrs. Bird's *Unbeaten Tracks in Japan*, Vol. II, p. 95.

† *Op. cit.* Vol. I., p. 379 and p. 380. ‡ Anderson's *Mandalay to Momien*, page 457.

commenced, the Patriarch Noah took a pair of each kind of animal and then repaired with his nearest relatives to the Ark. The rest of the people, as also a son of the Patriarch Noah were drowned on account of disobedience. The whole of the earth was flooded, and when the waters rose to the height of 40 yards above the trees and mountains, the inmates of the Ark, on account of the terrific storm and the fury of the waves, became senseless with fear and despaired of life. Then God ordered:—'Whoever will utter the words, Bismillâheh majrihâ o mursâhâ innâ rabi-il-ghafur ur-rahim,'* the Almighty God will deliver him from all difficulties. The Almighty God will, by the benign influence of His Name, preserve him from drowning. And the storm was allayed."

The Russians also believe that saving the life of a drowning man excites the wrath of the water-spirit. An illustration of this item of Russian folklore is given by Mr. Barry, in his novel entitled "Ivan at Home," which is descriptive of Russian life:—"Once upon a time, a drunkard fell into the water and disappeared. Some spectators who stood close by on the shore, did not shew any inclination whatever to save the drowning man. The man was drowned. The villagers held a court of enquiry, to investigate into the matter of that man's death from drowning. In the course of the enquiry it was elicited that no cross had been found on the neck of the deceased. The village Daniels, who sat to enquire into the matter, quickly returned the verdict that the man had got drowned because he had no cross upon his neck." The fisherfolks of Bohemia also display a similar kind of reluctance to save a man from drowning, under the impression that the presiding spirit of the water would get angry at thus being deprived of his victim, would give him bad luck in fishing and soon get him drowned. The same superstition also obtains in Germany, and, when a person comes by his death from drowning, the German peasants say, "The river-spirit claims his annual sacrifice," and sometimes also, "The nix has taken the drowned man." Mr. Jones, in his "*Credulities Past and Present*," offers an explanation to the effect that "a person who attempts to rescue another from drowning, is considered to incur the hatred of the uneasy spirit, which is desirous, even at the expense of a man's life to escape from its wandering." Dr. Tylor, in his "*Primitive Culture*," explains the super-

* This formula may be translated into Urdu as follows:
ساتھہ نام اللہ کے ہی چلنا اوسکا اور ٹھہرنا اوسکا تحقیق کے رب میرا البتہ بخشنے والا اور مہربان ہی *

The above may be translated into English thus. "The moving and the stopping (of this boat, *i. e.*, Noah's Ark) depends upon the influence of the Name of God. or in truth, our God is preëminently, a Pardoner of sins, and Merciful."

stition by saying that such reluctance is only a relic of the ancient belief that the water-spirit very naturally used to get angry on being deprived of his intended victim and, consequently, bore ill-will towards the persons who ventured so to deprive him, and would try to wreak vengeance on him at the first opportunity.

There is another class of popular beliefs as regards the time when the body of a drowned man would float up. In past times, it was popularly believed that the body of a drowned man would float up on the ninth day. This belief is prevalent in the county of Durham, as we are informed, on the authority of Mr. Henderson. Sir Thomas Browne, the author of the "*Hydriotaphia*" and the "*Religio Medici*," has also discussed this popular belief in his *Pseudodoxia Epidemica*.

In ancient times, people believed that the spirits of those persons who had been drowned in the sea, wandered for one hundred years, owing to their corpses not having been properly buried with all the rites of sepulture. Relics of this belief are to be found even at the present day. The belief still lingers among ignorant fisherfolk in some parts of England, that the spirits of those sailors who have been drowned by shipwreck frequent those parts of the shores near which the shipwreck took place, and some of them even assert that they have heard the spirits of the drowned sailors "hailing their own names." Hunt, in his "*Romances of the West of England*," refers to this belief, and says, that fisherfolks are afraid of walking in such localities after nightfall. This belief is similar to the Bengali superstition, described above, that the spirits of drowned persons haunt those tanks and wells in which they have been drowned, and has its counterpart among other races of people all over the world.

Lastly, there are some curious popular beliefs about the methods by which the corpses of drowned persons may be discovered. One of these methods is to tie up a loaf of ryebread in the shirt of the drowned person and set it afloat in the water, near the place where the person was drowned. It is believed that the loaf of bread will float until it reaches the spot where the body of the drowned person lies, and then sink The *Indian Mirror* of Thursday, the 29th September 1892, gives the following account of a search, in the aforesaid way, after the body of a drowned boy:—

"A novel method was adopted at Springfield, Illinois (United States of North America), in searching for the body of a drowned boy. The searchers tied up a loaf of ryebread in the lost boy's shirt and set it adrift in the water above the place where the lad was drowned, the theory being that the loaf would float until it came close to the body. The package in this case is said to have floated until it reached a certain

point, when it suddenly sank. The boy was found within a few feet of the spot."

This belief is to be found in other forms in many countries. Another form of it consists in floating a loaf weighted with mercury, which is believed to float at once towards, and stand over, the spot where the corpse lies. A writer in an American paper gives the following instances of this belief: "Some years ago, a boy fell into the stream at Sherborne, Dorsetshire, and was drowned. The body not having been recovered for some days, the mode of procedure adopted was thus: A four-pound loaf of best flour was procured, and a small piece cut out of the side of it, forming a cavity, into which a little quicksilver was poured. The piece was then replaced, and tied firmly in its original position. The loaf thus prepared was thrown into the river at the spot where the body fell, and was expected to float down the stream till it came to the place where the body had lodged. But no satisfactory result occurred." In another form, this belief is also prevalent among the aboriginal Indians of North America. Sir James Alexander, in his work on Canada, says: "The Indians imagine that in the case of a drowned body, its place may be discovered by floating a chip of cedar wood, which will stop and turn round over the exact spot. An instance occurred within my own knowledge, in the case of Mr. Lowery, of Kingston Mill, whose boat was overturned, and himself drowned near Cedar Island, nor could the body be discovered until this experiment was resorted to." The writer in the American paper, from whom I have quoted the above, says: "Not many months ago a man was drowned at St. Louis. After search had beed made for the body, but without success, the man's shirt, which he had laid aside when he went in to bathe, was spread out on the water, and allowed to float away. For a while it floated, and then sank, near which spot, it is reported, the man's body was found." Another modification of the theory of the discovery of a drowned man's corpse by a loaf, is current in Brittany. When a man gets drowned in Brittany and his corpse cannot be recovered, a lighted taper is stuck into a loaf of bread, which is then set adrift in the stream. Wherever the loaf of bread stands over, still, there, it is believed, the corpse lies underneath the water. Another modification of this belief consists in tying round a wisp of straw, a strip of parchment having on it some cabalistic letters written by the parish priest, and setting it afloat in the stream. Wherever it will stop still, there, it is believed, the body is sure to be found. A correspondent of *Notes and Queries* says that the corpse of a drowned person was recovered by this means.

In some other countries, a living animal is employed for the purpose of recovering the body of a drowned man. It is believed that the

animal will either cry out or sink at the exact spot where the corpse lies. In Norway, the people searching for the body take a cock with them in the boat and row with it hither and thither. It is believed by them that the cock will crow when the boat reaches the spot where the body of the drowned man lies. In a similar manner, the Javanese throw a living sheep into the water, when the corpse of a drowned man has sunk. They believe that the spot where the sheep sinks is the place where the dead body is sure to be found.

On Some Beliefs in a Being or Animal which is supposed to Guard Hidden Treasure.—*By* SARAT CHANDRA MITRA, M.A., B.L., *Pleader, Judge's Court, Chupra.*

Among some races of men there still lingers the belief that treasure, either kept concealed by men, or lying embowelled in the recesses of mines underneath the earth, are guarded by some mythical beings or animals. This belief seems to have been prevalent among the ancient Persians, for allusions to it are to be found in some of the classical works of their literature. Sometimes artificial means were resorted to by other races of people, as for instance the Bengalis, of killing a human male child and appointing his manes to be the guardian of the treasure which was made over to his charge and was hidden under the earth. This is a relic of the belief still prevalent among primitive men like the savage races of Africa, that the manes of the wives, slaves and horses killed at the funeral of a deceased chieftain, would accompany him in the next world, and that the hunting implements and other articles used by the deceased in his life-time, if buried with his corpse, would be of service to him in the life beyond the grave. In olden times in Bengal,

> "When the good old rule, the simple plan,
> That he should take who has the power
> And he should keep who can,"

was the order of the day, the people of Bengal resorted to the expedient of concealing their surplus treasure underneath the ground and appointing a Yakh (যখ), to keep watch and ward over it. The word Yakh (যখ) is a corruption of the Sanskrit word যক্ষ (Yaksha)—a name applied to a class of beings who were supposed to people the upper regions, and allusions to whom are frequently to be met with in Sanskrit literature.

The ceremony of appointing a Yakh (যখ), may be described thus: A male child was kidnapped without his parents knowing of it. The child was then bathed and clad in a new *dhoti*. Garlands of flowers were put round his neck. He was then worshipped. Then an excava-

tion was made in the ground, sufficiently large to accommodate the would-be Yakh and to contain the treasure, which was put into a number of *ghaḍas* (घड़ा), or pitchers of bell-metal. The child was then made to sit in this excavation, and the *ghaḍas* containing the treasure were arranged in it. A lamp containing a wick in some *ghi* or clarified butter, was lighted and kept burning near him. Then an invocation was made to the Yakh, that the treasure was being made over to him and that he should keep strict watch and ward over it. Then the excavation was closed by placing some planks over it, and earth was then thrown over it. The child gradually became drowsy, owing to asphyxia, and remained alive so long as the lamp kept burning. Ultimately the child used to die of suffocation. The spirit of the dead child, thus, became the guardian of the hidden treasure.

This practice was frequently resorted to in the olden times, and even after the establishment of British Rule in Bengal. It is now no longer heard of. If the parents of the missing child any how got scent that their child had been kidnapped and was being made a **यख**, and if they got any clue to his whereabouts, they immediately went thither, rescued the child from a horrible death, and appropriated the treasure to themselves, for the real owner thereof did not dare appear and prefer a claim to it, for fear of being punished for kidnapping and attempted manslaughter. Hence all the ceremonies were performed secretly so that the parents of the kidnapped child might not know of it.

Many tanks in Bengal had the evil repute of being haunted by Yakhs. I recollect having heard, in my childhood, from my mother and grandmother, many a mythical story to the effect that the Yakhs used to come up to the steps leading into the tanks, and place thereon the *ghaḍas* containing the hidden treasure, and disappeared within the depths of the tank as soon as a human being appeared on the spot, the *ghaḍas* also vanishing into the water. Whoever attempted to appropriate the money was killed by the Yakh.

This practice has now fallen into desuetude owing to the security of property and wealth, enjoyed under the aegis of British Rule, to the fear of prosecution for kidnapping and attempted manslaughter, and, above all, to the spread of education and the consequent enlightenment of men's minds from superstitious beliefs. Traces of the belief in **यख** still survive in several Bengali proverbial expressions. A thing which is highly prized by its owner and which he is loth to part with, is spoken of as being a **यखेर धन** or *the treasures of a Yakh.* A person carefully watching a thing or anxiously waiting for some other object, is spoken of as **यक्षिर मतन बसे आछे** or as sitting like a Yakh.

Similar beliefs about a mythical animal keeping watch and ward

over hidden treasure are also to be met with among other races of men. The ancient Persians had a belief prevalent amongst them to the effect that hidden treasure was guarded by a Mâr (مار) or snake. An allusion to this belief is to be found in the *Gulistan* of Sheikh Sadi, which was published in 656 A. H. (A. D. 1258). The story stands 13th in number, in Chapter V. of that work, and is as follows:—

يكي را زني صاحب جمال درگذشت * و مادرزن مرتوب بعلت كابين در خانهٔ متمكن بماند * مرد از مجاورت او چارهٔ نديدي تا گروهي آشنايان بپرسيدن امدندش * يكي گفت چگونه در مفارقت آن يار عزيز * گفت ناويدن زن چنان دشوار نيست كه ديدن مادر زن * گل تبا راج رفت و خار بماند * گنج بد داشتند و مار بماند *

The above may be translated thus: A person had a beautiful wife, who died. The mother-in-law, an old woman, remained a fixture in the house, on account of the dowry. His neighbours, perceiving no remedy, came in a body to him on a visit of condolence. One of them asked how he was faring in that state of separation from his beloved wife. He replied that the separation from his wife was not so intolerable as the presence of his mother-in-law. "The rose has been plucked and the thorn left. *The treasure has been carried away and the snake left.*"

There was also another belief prevalent among the ancient Persians to the effect that hidden treasure is guarded by a mythical creature named طلسم (*Tilism*), which neither enjoys the treasure nor permits anyone else to enjoy it. There seems to be a difference of opinion about the meaning of the word طلسم (*Tilism*, from which is derived the English word *Talisman*). Davy, in his well-known Persian-English Dictionary, gives the following enplanation of this word:

طلسم Tylsem. A Talisman, or magical image, upon which, under a certain horoscope, are engraved mystical characters, as charms against enchantment, or fascination. *They use Talismans as preservatives in various ways, particularly in burying them with treasure, to prevent it from being discovered.*

There are allusions to this latter belief in Sheikh Sadi's Bustan, Chapter II., on Beneficence (باب دوم در احسان) in the story of the Miser and his Prodigal Son (حكايت پدر بخيل و فرزند لاابالى). The couplets are as follows:

بخيل توانگر بدينـــار و سيم * طلسميست بالاى گنجى مقيم
ازان سالها مى بماند زرش * كه لرزد طلسمى چنين برسرش

They may be translated thus:

The miser, rich in dinars and silver,
Is a tilism dwelling over the treasure.
His gold remained years, for the reason
That such a tilism trembles over its head.

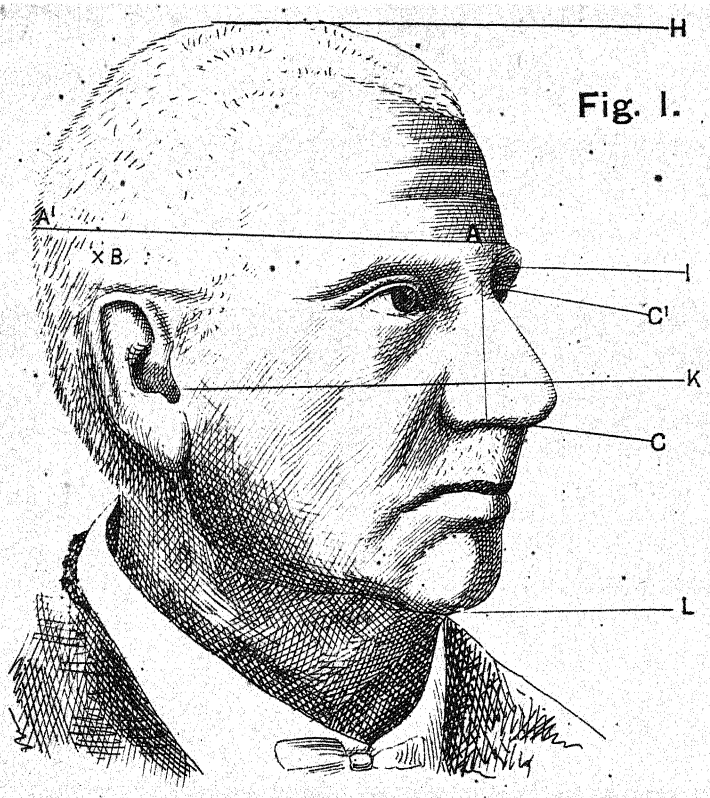


Fig. I.

Cephalic.

A ... A^1 Maximum antero-posterior diameter from glabella or eminence above root of nose (A).

B. Approximate starting point for maximum transverse diameter B-

Cephalic Index = $\frac{B...B \times 100}{A...A^1}$

Nasal.

C ... C^1 Height of nose from nasal spine to root of nose, from one to three millimetres below transverse axis of eyes.

D ... D Maximum width of nose outside nostrils, without depressing flesh.

(See figure 4.)

Nasal Index = $\frac{D...D \times 100}{C...C^1}$

Vertical proportions of the head.

H ... I. Height of head from vertex to intersuperciliary point, *i.e.*, to centre of a line drawn at a tangent to the curvature of the eye-brows.

H. ... K. Height of head from vertex to tragus.

H. ... L. Height of head from vertex to bottom of chin.

ANTHROPOMETRIC INSTRUCTIONS.

By the Hon'ble H. H. RISLEY, C.I.E.,
Honorary Member of the French Academy,
President, Anthropological Society of Bombay,
Secretary, Anthropological Branch, Asiatic Society of Bengal.

In selecting subjects, only adults between the ages of 25 and 45 should be taken. Accurate determination of age being of course impossible, those persons must be rejected who are obviously not fully grown, or who appear to be over 45, deformed persons, dwarfs, cripples, and men who have suffered from any disease affecting the form of the nose. In measuring the higher castes it is as well also to reject persons of very black complexion and with very broad and depressed noses, as in such cases there is at least a suspicion of the intermixture of low-caste blood. Similarly among the lower castes, men of very fair complexion and high-caste type of feature should be rejected. The object is to determine the standard type of each caste, and for this purpose individuals of clearly exceptional colouring and feature should be excluded.

The subjects to be measured should be made to sit down in line, and great care should be taken that this order is not disturbed, and that if a man gets up and goes out he returns to his proper place in the line. If this rule is not observed, the subjects will get mixed, and the dimensions recorded under one serial number will belong to different individuals. The risk of this is not so great if all the measurements required are taken consecutively on each subject. But, after trying both plans myself, I think the simplest and most expeditious plan is to take all the measurements for which the same instrument is required on each subject in order. For instance, all the subjects should be measured in order with the cephalometer, each man after measurement returning to his own place, then with the nasometer, then with the graduated square and steel pointer, and last of all with the goniometer. If the services of an assistant are available, he may be told off to watch the subjects, to see that they do not change places, and to bring them up in order for measurement.

The points from and to which each measurement is taken are shown in the appendix, and the instructions given there are illustrated by plates. I will now add a few remarks on each measurement, derived from my own experience.

Cephalic dimensions.—These are taken with the cephalometer (compas d'épaisseur de Broca). The subject should be seated on a chair or stool. For the antero-posterior diameter (A—A_1 in Fig. 1) the starting point is the glabella. This should be felt for with the forefinger, and the instrument so held that its point will pass along the forefinger and remain firmly on the glabella. Care must be

taken that the point does not slip off the glabella. The point of maximum length at the back of the head will usually be found nearly in the same plane with the glabella. In searching for it, the posterior point of the cephalometer must be kept moving up and down in the central perpendicular line of the back of the head, and the graduated scale of the instrument must be watched so as to see when the maximum diameter has been reached. The *inion* or occipital protuberance is *not* the point to be measured to. A magnifier may be used to read the scale of the cephalometer, which is graduated rather minutely. After having found the maximum, the measurer should take care not to remove the instrument from the subject's head *before* reading off the measurement, or if he does so, should tighten the screw. Experience shows that it is very difficult to remove the instrument without altering the reading, unless the screw has been tightened.

The maximum transverse diameter (B in Fig. 1) is best measured from behind the subject. Its terminal points will usually be found somewhere near B. There is no special difficulty in measuring it. All that the operator has to do is to watch the graduation of the cephalometer, so as to see when he has hit upon the maximum diameter. He must also see that the branches of the instrument on either side are in the same plane. *Vide* figures 2 and 3.



Fig. 2.—Antero-posterior diameter.



Fig. 3.—Transverse diameter.

In measuring the zygomata (posterior arches of cheek-bones) care must be taken to hold the instrument steady, as the points are apt to slip off the ridges of bone on one side or other, and thus to record too small a dimension. The measurement is the maximum breadth procurable with the cephalometer at the points F—F in figure 4. The index is formed with the bigoniac breadth E—E thus $\frac{E—E \times 100}{F—F}$.

Fig. 4.



E ... E Bigoniac breadth.

F ... F Maximum breadth of zygomata (posterior arches of cheek-bones).

Maxillary-zygomatic Index $= \frac{E \ldots E \times 100}{F \quad F}$

M ... M¹ = Bi-malar breadth.

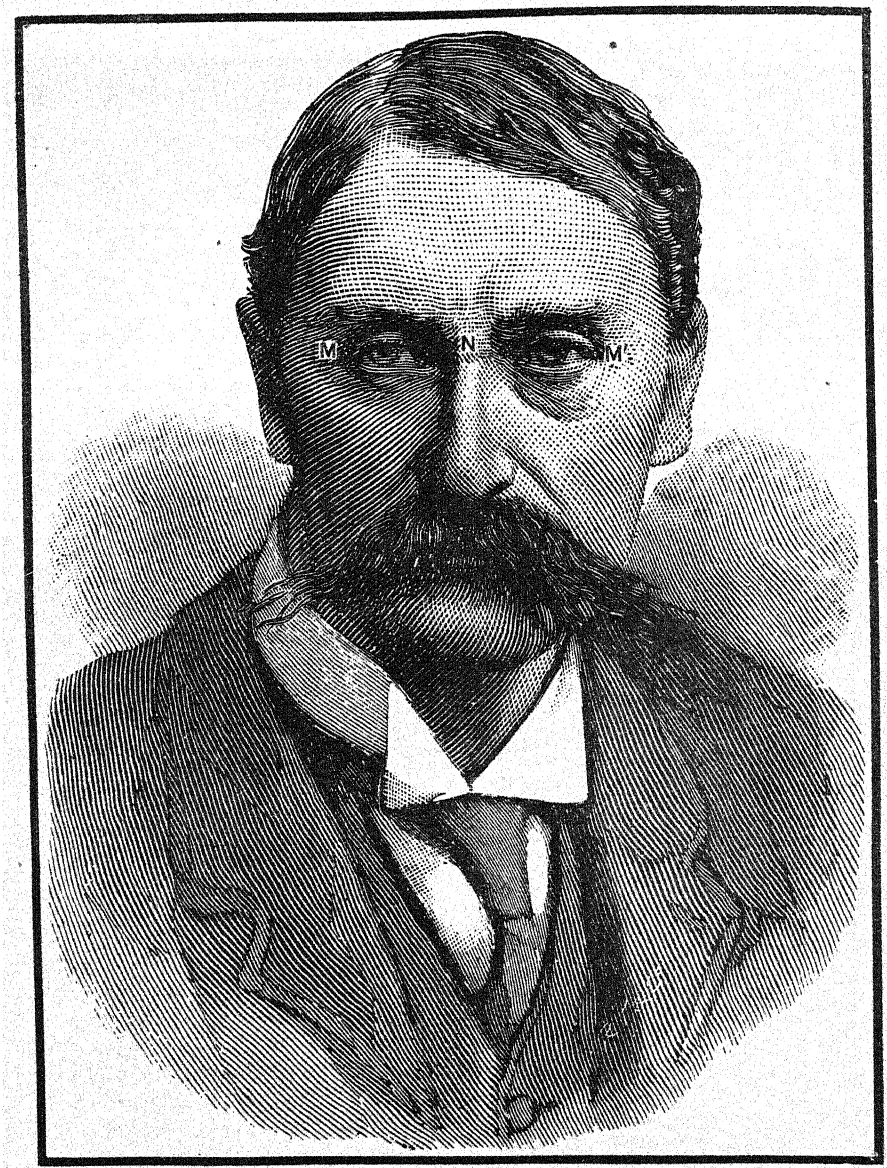
M ... N ... M¹ or N ... M × 2 = Naso-malar breadth.

$\frac{\text{Naso-malar line} \times 100}{\text{Bi-malar line.}}$ = Naso-malar index.

Fig. 5.

~~IV A~~

Naso-Malar Index on Living Subject.



Reg No 66, Bengal, Gl.—Nov 92.—1,500. Photo-litho., S I. O., Calcutta.

M ... M′..... = Bi-malar breadth.

M ... N ... M′ or M × 2 = Naso-malar breadth.

Nasal dimensions.—These are taken with the instrument which, for convenience of reference, I may call the nasometer (compas glissière de Broca). The lower point for the height of the nose is easily found. The nasometer being opened to the approximate height of the nose, the pointed end of the lower limb should be placed at the junction of the central nasal cartilage with the upper lip and pressed inwards and upwards until it meets with steady resistance from the nasal spine. The upper point also is easy to find in persons who have the root of the nose well defined. By feeling with the finger one can readily fix the point at which the bridge of the nose meets the frontal region of the skull and forms a depression or valley, the deepest point of which determines the measurement. This point can be either felt for and marked with red pencil or red ink before the instrument is applied, or can be ascertained by moving and adjusting the upper limb of the instrument itself. *Vide* C—C^1 in figure 1.

Some races, however, notably Mongolians, such as Tibetan, Limbus and the like, have no well-defined depression at the root of the nose. In such cases a close inspection of the root of the nose will disclose either one or two transverse folds or wrinkles of skin running at right angles to the direction of the nose. Where there are two folds, the point of the instrument should be placed between them; where there is only one, the instrument should be placed on the fold. The folds are usually to be found about two millimeters above the transverse axis of the eyes.

The width of the nose (D—D in Fig. 4) should be measured with the blunt ends of the nasometer. The object is to get the maximum width of the nostrils. The instrument therefore should just touch the skin on either side without depressing it.

I may mention here that all authorities agree in considering the dimensions of the nose the most valuable race characteristic that can be tested by measurement. Special care should therefore be taken in measuring these, the more so as, the figures being comparatively small, the averages will be more liable to be thrown out by any error. The measurements are, however, easy to take, and if carefully done show little variation in the hands of different operators on the same subject.

Naso-malar dimensions.—First make a pencil or red ink dot on the most posterior point on the front surface of the outer edge of each orbit. The normal situation of these points is shown at M and M^1 in figures 4 and 5. They can readily be ascertained by feeling with the finger. Then make a similar dot on the centre of the bridge of the nose at the most posterior point. See the point marked N in figures 4 and 5. This point will correspond exactly with the "upper point" of the nasal height described above. Care must of course be taken to place the dot exactly in the centre of the nose.

Having made the three dots in the manner described above, measure with the nasometer the distance between the two orbital

dots (M and M^1) *in a direct line*. This will give the "bimalar breadth," and should be entered in column 24.

Then measure with the same instrument the distance from either of the orbital dots (M or M^1) to the nasal dot (N), *and double the result*. This will give the "naso-malar breadth," and should be entered in column 25. It will perhaps be the safest plan to test the distance from each dot (M and M^1) to the dot N before doubling.

Figure 5 shows the points for the index on the living subject.

The index is

$$\frac{\text{Naso-malar breadth} \times 100}{\text{Bimalar breadth}}$$

to be entered in column 26.

Vertical proportions of the head.—These are the only measurements which present any serious difficulty, and after several experiments I hope that a mode of overcoming this difficulty has been discovered. The measurements are taken with the graduated T—square (*Equerre céphalométrique*), and the smaller steel sliding scale or the wooden triangular slide. Their accuracy depends upon the subject's head being exactly upright, and being kept in that position while the measurements are going on. There appear to be two recognised methods for placing the subject's head in an upright position. The first, devised by Dr. Barclay in 1803, consists in making the subject hold with his teeth a flat plate of metal mechanically levelled. Topinard discusses this plan and condemns it as too complicated. For use in this country it is open to the further objection that unless all the subjects operated on at the same time belong to the same caste and sub-caste, the plate of metal would have to be continually washed in deference to caste prejudices. It also appears to me that if a man has got a plate of metal between his teeth, the height from the top of his head to the bottom of his chin cannot be correctly measured, and will in practice vary considerably. The second method, which Topinard prefers, "consists in directing the subject to look steadily at the horizon, and in correcting the position of his head if by accident or through nervousness he does not look straight before him in the natural manner." In this manner, Topinard adds, the head will be adjusted in accordance with the plane of vision, and will necessarily assume a correct position for the purpose of measurement.

We must, I think, take it on Topinard's authority that the head can be correctly placed by following these instructions. We are met, however, by the further difficulty that after the correct position has been ascertained the subject cannot keep his head absolutely still, and that every movement, however slight, materially affects the measurements. Having got the correct position, we want

to fix it, in order that there may be no movement while the measurements are going on, and in order that the position may, if necessary, be reproduced for the purpose of repeating and testing measurements already taken. For this purpose I have had a small clamp, with a horizontal bar attached to it, made by the Mathematical Instrument Department. The clamp runs on the height measure which is in the box, and is used in the following manner.

Adjust the subject's head correctly by the plane of vision as explained above. Then place the height measure with its plummet attached on the left side of the subject, and see by observing the plummet that the measure is upright. Run the clamp up until the horizontal bar attached to it touches the central cartilage of the subject's nose, and renders it impossible for him to depress his head. Then screw the clamp tight. The bar will rest exactly at the junction of the upper lip with the central cartilage—at the point, in fact, which forms the lower starting point for the measurement of the height of the nose (C—C^1 in Fig. 1). So long as the subject rests his nose on this bar he will be in the correct position as previously ascertained; and if the height of the bar on the graduations of the height measure is noted, the position can be reproduced at any moment. In fact the sources of error are reduced to one—the possibility of the subject raising his head—and this can be easily guarded against by seeing that his nose is tightly pressed against the horizontal bar.

It will be seen the horizontal bar in no way interferes with the process of measuring. It may even assist it, if the vertical arm of the T—square be steadied against the horizontal bar in taking the dimensions from vertex to tragus.

The position of the head being thus secured, a few remarks may be added on the details of the measurements.

Height from vertex to intersuperciliary point (H—I in Fig. 1).—The intersuperciliary point is defined by Topinard as "situated in the centre of a line drawn at a tangent to the convex surfaces of both eyebrows." It can be ascertained by laying the smaller metallic slide across the eyebrows, and drawing a line with red pencil along its upper edge, or simply by turning the slide slightly and pressing in the upper edge, so that it makes a slight depressed mark in the skin. The mark will last long enough to enable the measurement to be taken, and is perhaps more accurate than a pencil line. On the other hand, if a pencil line is made, the measurement can be repeated with greater certainty.

Height from vertex to chin.—This dimension is entered in column 29 of the register. It can, however, be most conveniently taken immediately after the height from vertex to intersuperciliary point, as the T—square is in exactly the same position throughout. Care must be taken to read from the *upper* edge of the slide in measuring the chin dimension. The *lower* edge gives the reading for the intersuperciliary point if (as should be the case) the sharp point

of the slide is touching the line drawn at a tangent to the convex surfaces of the eyebrows.

Height from vertex to tragus (H—K in Fig. 1).—According to Topinard, the point to be measured to is the centre of the tragus. K in Figure 3 is therefore a trifle too low.

Facial angle of Cuvier (ONX in Fig. 6).—A special instrument is provided to measure this angle. The subject holds between his teeth the small projection in the centre of the instrument: the bosses are put into his ears and held there; and the indicator is adjusted so that the round knob at the end of it touches the glabella. The angle is then read off on the scale. It should be observed that the *upper* front teeth are the point which determines the angle. If by reason of any malformation of the teeth the subject cannot grip the instrument himself, the operator should hold the instrument so that the projection is in contact with the upper front teeth. Care should be taken that the flexible band of steel which passes through the ear bosses is drawn fairly tight, and the instrument should be given time to settle before the angle is read off. When persons of different castes or sub-castes are being measured at the same time, each subject should, if he wishes to do so, be allowed to wash the part of the instrument which touches his teeth, after it has been used by another person. The instrument must not be roughly handled or bent in the process of washing, and must be oiled very thoroughly afterwards.

Circumference of the chest.—This is measured with the tape, the lower edge of which should rest on the nipples, the arms being raised while the tape is adjusted and afterwards lowered. The ends of the tape are held by the operator standing behind the subject. Care must be taken that the tape is in a true horizontal plane perpendicular to the axis of the thorax. The dimension should be read when the breathing is at rest, midway between inhalation and expiration.

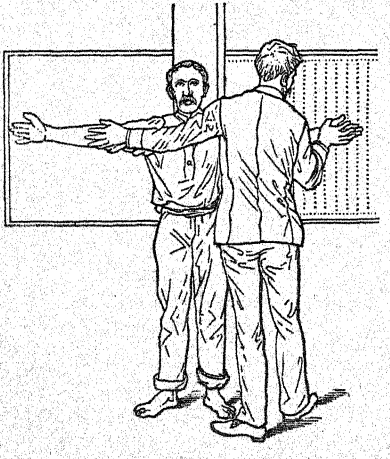
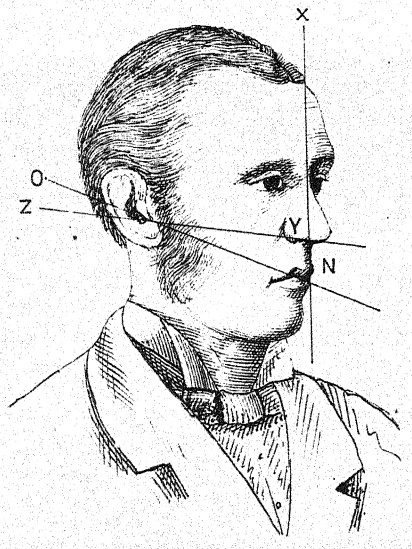


Fig. 7.—Grande envergure.

Grande envergure or length from third finger to third finger, the arms being fully extended at right angles to the body. This is best taken by making the subject extend his arms against a wall and marking the points which his fingers reach. The distance between the points can then be measured with the standard, not with the tape. *Vide* figure 7.

Fig. 6.



XYZ. Facial angle of CAMPER.

ONX. Facial angle of CUVIER, recommended by TOPINARD for the living subject.

Reg. No. 646, Bengal, G1.—Jan. 93.—1,500. Litho, S. I. O., Calcutta.

Height sitting.—Make the subject sit against a wall, so that the whole of his back, from the sacrum to the shoulders, shall be in contact with the wall, as in Fig. 8. Measure with the standard from the ground to the top of his head. He should not be allowed to sit on the ground, but on some article of known height, such as the box of instruments, the height of which, 10 centimetres, should be deducted from the measurement obtained. The legs should be extended and parallel.

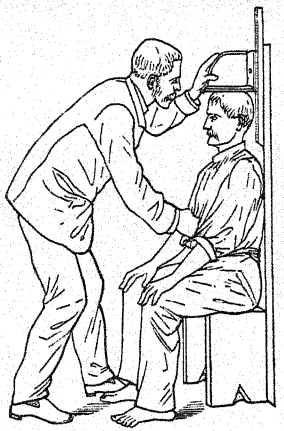


Fig. 8.—Height sitting.

Height kneeling.—Make the subject kneel on both knees, taking care that the thigh is perpendicular to the ground and that there is no stooping. Then measure to the top of the head with the long standard.

Height to junction of sternum and ribs.—Make the subject stand with his back to the wall and measure with the long standard from the ground to the *fourchette sternale, i.e.*, to the junction of the sternum with the ribs. The point to be taken is the lower end of the *gladiolus*, not the ensiform cartilage, which lies below and is not so easily reached.

Bigoniac breadth.—Measure with the cephalometer the maximum breadth of the outer surfaces of the inferior maxillary bone from one angle to the other (E—E in Fig. 1). Plate No. 56 at page 55 of the ninth edition of Gray's Anatomy shows the angle, which is the point to be taken.

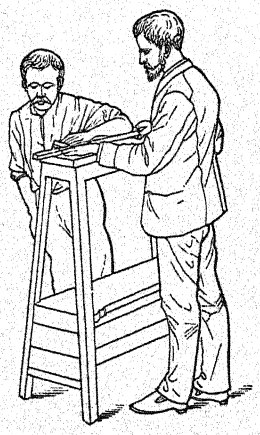


Fig. 9.—Length of fore-arm.

Length of the fore-arm.—Measure with the sliding scale (*glissière anthropométrique*) from the olecranon process of the ulna to the end of the middle finger, the left arm being laid on a table as in figure 9. *Vide* plate 220 in Topinard's *Eléments d' Anthropologie Générale.*

Length of left foot.—Measure maximum length from toe to heel with the sliding scale (*glissière anthropométrique*) as in figure 10.

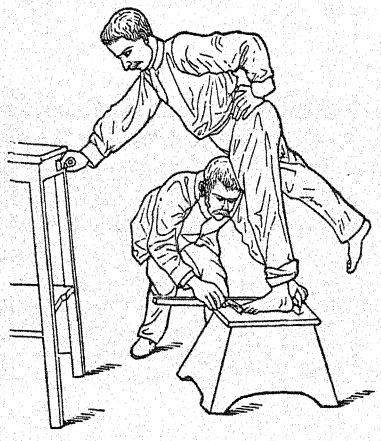


Fig. 10.—Length of left foot.

Length of middle finger of left hand.—Measure with sliding scale (*glissière anthropométrique*) as in figure 11.

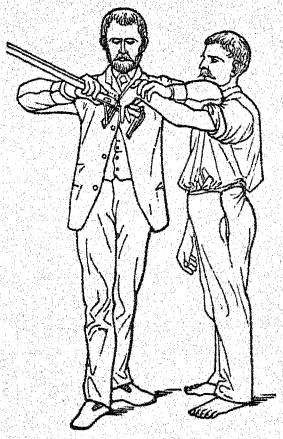


Fig. 11.—Length of middle finger of left hand.

Maximum breadth of the shoulders.—Measure with sliding scale (*glissière anthropométrique*) from the external face of the head of the humerus where it is covered by the deltoid muscle.

Maximum breadth of hips.—Measure with sliding scale (*glissière anthropométrique*) the maximum breadth from the external surfaces of the spines of the ilia (*crêtes iliaques* in Topinard's plate 212).

General.—In reading all the instruments fractions of a millimeter should be disregarded, and the nearest whole figure taken. In practice it rarely happens that the indicator exactly divides a millimeter.

Minute accuracy in measuring is the one essential point. Inaccurate measurements are not merely worthless and misleading in themselves, but will throw out the averages of the whole set of figures concerned. If therefore a doubt arises as to the accuracy of any particular dimension, the measurement should be repeated. If after several trials the results still vary, an average should be struck, and that average entered in the form.

All the instruments should be carefully oiled after use with crude Rangoon oil or vaseline.

A specimen of the hair of each caste or tribe measured should be sent up for examination. It should be about 2 inches long and cut from the middle of the head, tied round with tape, ticketed with the name of the caste or tribe securely fastened to the tape, and placed in an envelope with the name of the caste legibly written on it in Roman character.

DARJEELING, H. H. RISLEY.

The 20th September 1886.

PHYSICAL CHARACTERISTICS.

I.—SCHEDULE.

Of Observations of External Characters.

Preliminary Particulars.

No. _____ Date _____

Sex _____ Age _____

Tribe _____ Locality _____

Language or dialect _____

General condition—

(1) Stout. (2) Medium. (3) Thin.

Descriptive Characters.

A.—Colour of skin on parts not exposed to the air?—

Black ... { Absolute (1). Sooty (2).

Brown ... { Reddish (3). Yellowish (4).

Red (5).

Yellow (6).

White ... { Yellowish (7). Brownish (8). Pale (9). Rosy (10).

B.—Colour of eyes?—

Dark of all shades (1).

Medium ... { All medium shades, except green (2). Green (3).

Light ... { All light shades, except blue (4). Blue (5).

C.—Fold of skin at inner angle of eye?—

(0) Absent. (1) Vestige remaining. (2) Covering $\frac{1}{3}$ to $\frac{1}{2}$ the caruncle. (3) Covering the caruncle.

D.—Colour of hair?—

(1) Black. (2) Dark brown. (3) Medium. (4) Blond or fair of all shades. (5) Red.

(If possible, a lock of hair should be attached to the schedule.)

E.—Character of hair?—

(1) Straight. (2) Undulating or wavy. (3) Curly. (4) Woolly.

F.—Amount of hair { On the face? On the body?

(0) Absent. (1) Scarce. (2) Medium. (3) Abundant.

G.—Shape of face?

(1) Long and narrow. (2) Medium. (3) Short and broad. (4) Pyramidal, *i.e.*, narrowing upwards. (5) Wedge-shaped, *i.e.*, pointed towards chin.

H.—Profile of nose?—

(1) Straight. (2) Aquiline. (3) Concave or turned up. (4) High bridged. (5) Sinuous or wavy. (6) Chinese type. (7) Negroid type. (8) Australoid type.

I.—Prognathism or prominence of the region of the mouth?

(0) Absent. (1) Slight. (2) Moderately marked. (3) Considerable.

J.—Lips—

(1) Thin. (2) Medium. (3) Thick. (4) Everted.

K.—Prominence of face transversely?—

Proprosopic (face prominent, cheek bones not perceptible). { Considerable (1). Moderate (2). Mesoprosopic (3).

Platyprosopic (face flat, cheek bones conspicuous). { Well marked (4). Excessive (5).

II.—EXPLANATION OF SCHEDULE.

The "Preliminary Particulars" require some explanation. The *age* may offer some difficulty on account of the person not being able to express it; in such cases the observer must indicate it to the best of his judgment, inserting the word "about" before the number he enters for it.

The condition of the body is to be noted, as it may explain some peculiarity in the measurements which might be thought to be due to error. To save time and trouble in writing, numbers within brackets are attached to each of the conditions, so that if the person is thin, it will be sufficient to write "3" in the blank column. This plan is also to be followed in recording the descriptive characters which follow.

The "Descriptive Characters" are next to be recorded, and while this is being done the observer may engage the subject in conversation, so as to gain his confidence and overcome any fear or repugnance he may have to be measured. When the colour or form in the subject does not correspond to any in the schedule, but is intermediate between two colours or forms, the two numbers between which it lies should be entered in the blank column. If any difficulty is found in answering the questions in the schedule, reference should be made to the section Descriptive Characters for further explanation.

III.—DESCRIPTIVE CHARACTERS.

In the following sections the various particulars regarding the Descriptive Characters asked in the Schedule are explained, and others supplementary to them which may with advantage be noted by the traveller are given.

Skin.

The colour of the skin should be indicated on Dr. Topinard's system as follows:—

Is the skin—1. Black, coal-black? 2. Sooty-black? 3. Dark reddish-brown, chocolate? 4. Dark yellow brown, dark olive? 5. Red, copper-coloured? 6. Yellow, olive? 7. Yellowish-white? 8. Brownish-white? 9. Pale white? 10. Florid or rosy?

A very convenient part to observe in clothed persons is usually the outer part of the upper arm. The part chosen should be stated in any case.

1. Is the skin smooth and velvety, or coarse and rough?
2. Is the oily excretion abundant?
3. Do the parts covered differ much in colour from those exposed to the sun?
4. Do different castes or sections of the population differ notably in colour?
5. What is the prevailing colour or complexion in parts *not* habitually exposed?
6. And what in those habitually exposed to weather and sunshine? Do freckles occur?

Eye.

The colour of the iris is very important; next in importance are the form and position of the opening.

Topinard's plan of denoting colour recognises four classes:—

1. *Dark.*—Including those which are called black-brown, dark hazel, &c.

2. *Medium or Neutral.*—Such as cannot at once, in a good light, be distinguished as light or dark. Among these are the dark greys; most of the greens; those with a predominance of orange towards the centre, but of grey and light green elsewhere, &c.

Light { 3. Other than blue (light grey, very light, green, &c.)
4. Blue.

What are the relative proportions of these four classes? The eyes should be examined from a moderate distance, so as to get a general impression of the colours.

Forms and positions:—Are the eyes placed with their long axis nearly in one horizontal plane (as in most Europeans), or are their outer angles more or less visibly elevated (as in many or most Chinese)? Are they deeply set, or *à fleur de tête*, prominent? Is the upper eyelid thick? Does it turn down at the inner angle, covering more or less the caruncle? Does the outer angle of the opening appear compressed and pointed, so as to suggest an almond shape?

Hair.

1. Is the colour in adults—1. Black, coal-black? 2. Dark brown? 3. Medium, chestnut brown? 4. Fair blond, yellow, or flaxen? 5. Red auburn?

Only adults whose hair has not begun to turn grey should be selected for this purpose. The shades are best discriminated not in sunshine, but in the shade on a bright, clear day.

2. If the hair in adults is always or usually black, what colours prevail among children?

3. Is the natural colour of the hair interfered with in any way? Some races dye the hair.

4. Is there any colour which is preferred to others?

5. Obtain specimen locks at different ages, if possible, viz., (*a*) at birth, (*b*) between 1 and 2 years, (*c*) 2 and 4, (*d*) 4 and 8, (*e*) 8 and 16, (*f*) adult.

6. Is the hair straight, slightly or much waved, curly or frizzly, or what is called woolly?

7. If curly or frizzled, is this due to nature or art?

8. Is it in great quantity?

9. What length does it attain, whether measured by the apparent distance between points and roots of the locks, or by stretching individual hairs?

10. Does it grow in separate tufts? or is it uniformly scattered over the hairy scalp?

11. Are the hairs coarse or fine in texture? round, flattened or kidney-shaped in section?

12. Have the males any beard? If not, are they beardless by nature, or do they pluck out or otherwise destroy the beard?

13. On what parts of the body besides the head, armpits, and pubes does hair grow? at what age does it begin to grow on the different parts? and in what quantities?

14. What is the difference between male and female in this respect?

15. What difference is observed in the quality and colour of the hair on different parts of the body?

16. In what direction does the hair grow on different parts of the body, hands, arms, legs, &c.?

17. At what age do greyness and baldness appear? and in what parts first?

Form of Face.

Where exact measurements of the facial features cannot be obtained, answers to the following questions may supply their place:—

1. Is the face, in a front view, square, oblong, round, elliptic, short-oval, long-oval, shield-shaped (like an escutcheon), or wedge-shaped?

2. In profile is it convex or concave?

3. In profile also, are the chin, the nose, the mouth, the eye-ridges markedly prominent? and of the supra-orbital region are

the eye-ridges proper, or the glabella (central boss) the more prominent ?

4. Is the nose straight, aquiline, hooked, concave, high-bridged (*busqué*), clubbed, or sinuous ? or has it the Chinese type (straight but flat), or the negroid (short, broad, nearly straight), or the Australoid or Papuan (broad, with the lower part forming a flattened and depressed hook) ?

5. Is the chin broad, narrow, angular, or round ?

6. Are the cheekbones broad, prominent forwards, or inconspicuous ? or is the face in this region flat ?

7. Are the lips thin, medium, or thick, or is the upper lip turned upwards and the lower lip turned downwards ?

8. Are the ears large or small, flat or outstanding, simple or finely developed ?

9. Are the lobes large or absent, attached or detached ?

Further notes on the same subject.

Proprosopic and platyoprosopic are terms used to indicate whether the middle part of the face, between the level of the lower part of the nose and the supra-orbital level above, projects forward or is flat. In the former the breadth of the face at the level of the cheekbones appears diminished by these bones receding or being as it were pressed inwards; so that the face curves regularly forward from the ears to the nose, the latter is consequently prominent and appears as a keel on the top of the arch. In the second the face is broad and flat in appearance, the cheekbones are prominent, and in extreme forms the side and front of the face are almost at right angles to one another, the bend of the angle being at the cheekbones, and the nose appears as if projecting from an almost flat surface. Extreme forms of the first type are frequently seen amongst English people, while the most marked type of the second is met with in the Eskimo and of the Chinese.

MEDICAL SECTIONS.

I.—Reproduction.

1.—*Manners and customs affecting the sexes previous to marriage.*

(*a*) Relating to males :—

Is there any evidence of special physical training for sexual purposes before or after puberty and preparatory to marriage (*e.g.*, circumcision, the "mika" operation, *i.e.*, artificial hypospadias, &c.) ? Is there any minimum limit of age ? Is any proof of virility required ? Is promiscuous intercourse, with or without precautions against pregnancy, permitted before marriage ? If so, what steps are taken to enforce the rules, and what punishment follows their breach ?

(*b*) Relating to females :—

Is there any special interference with the sexual organs in girls previous to puberty (*e.g.*, dilatation of organs, closure of vulva, &c.) ? Is there any minimum limit of age? Is connection permitted before marriage, or what steps are taken to ensure chastity or prevent pregnancy?

II.—Menstruation.

At what age does menstruation usually occur? Are there any special customs or superstitions connected with (1) ordinary, (2) precocious, (3) deferred menstruation? Is purification practised subsequent to each menstruation?

III.—Marriage.

What is the average age of both sexes at marriage? Note any special customs relating to marriage ceremonies?

IV.—Pregnancy.

What means are adopted for determining that a woman is pregnant? Is she debarred from cohabitation or otherwise secluded during pregnancy? Note any special diet or other customs during pregnancy relating either to husband or wife (*e.g.*, the "couvade," &c.)?

V.—Labour.

What preparations are made in anticipation of labour (*e.g.*, as to food, dwelling, bed, assistance, seclusion, &c.)? What position is usually adopted? Note exceptions and reason for the same. What is the average duration of labour? Note any customs or superstitions regarding the caul, treatment of cord, disposal of placenta, &c. Are difficult labours common? To what are they chiefly due? How and by whom are complications treated? If a woman dies undelivered, are any means taken to save the child?

VI.—The Puerperium.

How long is a woman confined to bed? Is she subject to any special diet, system of purification, &c.?

VII.—Lactation.

What is the average duration of suckling? Is any special diet enforced? Is she restrained from sexual intercourse during this period?

VIII.—The Child.

How is the child treated immediately after birth? How are still-born children resuscitated? Is there any special treatment of

the head? Are there any special customs with regards to twins or preternatural births? Are there any customs or ceremonies connected with the naming of the child akin to baptism?

IX.—General.

What is the average number of a family? What is the relative proportion of sexes? What is the greatest number in a family? How many have been produced by one mother, and of these how many grew up? Do twins or triplets, &c., occur frequently? Ascertain, if possible, the total number of boys and girls respectively born in one given area or tribe. (This is of importance in districts where polyandry exists.) Are there any restraints on population? Is sterility in woman common? Is want of virile power complained of by men? Are drugs or other means used to produce abortion or stimulate sexual desire and power? If so, what are they? Are births out of wedlock common? What is done with the children? Whether do the lower or upper classes produce the larger families? Does population seem to be increasing, or the reverse, judging by extent of occupied land, size of cemeteries, ruins of villages, &c., as well as by report? Can the ratio of births and deaths in a community of known population be obtained.

NOTE.—The above questions and instructions have been taken, with slight modifications, from the second edition (1892) of Notes and Queries on Anthropology, edited for the Council of the Anthropological Institute, by John George Garson, M.D., and Charles Hercules Read, F.S.A.

FORM I.

Form I.

Measurements of *members of the*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Serial number.	Name.	Caste or tribe.	Sub-caste, or sub-tribe endogamous.	Section, or sept exogamous.	District of birth.	Age.	Measurement round chest.	Measurement with extended arms.	Height.	Height sitting.	Height kneeling.	Height lower end of gladiolus.	Weight in pounds.	Cephalic length.	Cephalic breadth.	Cephalic index.
					TOTAL ...											

caste taken at *on the* 189 .

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Bimaxillary or bigoniac breadth.	Maximum bizygomatic breadth.	Maxillary-zygomatic index.	Nasal height.	Nasal width.	Nasal index.	Bimalar breadth.	Naso-malar breadth.	Naso-malar index.	Height from vertex to intersupercilliary point.	Height from vertex to tragus.	Height from vertex to chin.	Facial angle.	Length of fore-arm.	Length of left foot.	Length of middle finger of left hand.	Maximum breadth of hips.

Signed _____

W. J. & R. D'E.—Reg. No. 3696J—1,500—26-1-93.

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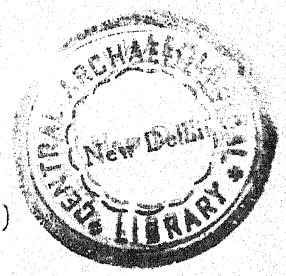
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"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta. It will languish, if such communications shall be long intermitted; and it will die away, if they shall entirely cease." SIR WM. JONES.

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JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL.

Part II.—NATURAL SCIENCE.

No. I.—1890.

I.—*On the occasional Inversion of the Temperature Relations between the Hills and Plains of Northern India.*—*By* JOHN ELIOT, M. A., METEOROLOGICAL REPORTER TO THE GOVERNMENT OF INDIA.

[Received December 2nd;—Read December 4th, 1889.]

One of the more important features of the meteorology of the month of January 1889 in Northern India was the remarkable variations of the temperature relations between the hills and plains of Northern India and more especially of Upper India. Under normal conditions of decrease of temperature vertically the temperature at the Punjab hill stations should be 15° to 20° lower than at the adjacent plain stations. The relation is sometimes reversed in the cold weather and the night temperatures are found to be several degrees higher at the hill stations than in the Punjab plains. Such variations or inversions of the ordinary temperature relations are of occasional occurrence in all mountain and adjacent valley districts. They have been observed in previous years in Northern India, but were larger and more prominent in Northern India in January 1889 than has been the case for many years.* The present hence appears to be a favourable period for discussing the

* Similar large and prolonged inversions of temperature occurred in the years 1879, 1880, and 1881 in Upper India.

facts and causes of these occasional inversions of temperature in Northern India.

Before commencing with the subject proper of the paper it is desirable to give a summary of what is known generally of these occasional inversions of the ordinary vertical temperature relations.

Ferrel states it is probable the diurnal temperature oscillations of the upper strata of the atmosphere in the open air away from the influence of contact with the Earth's surface are extremely small. The effect of the Earth's temperature on that of the air above is not so great as it is below, so that this causes the amplitudes in the oscillations of the air temperature near the Earth's surface, though less than those of the Earth's surface, to be greater than those of the air above. The effect of this, it is readily seen, is to cause the temperatures in winter and during the night to approximate more nearly to the temperatures above, and hence to diminish the rate of decrease of temperature with increase of altitude at these times. But during the summer and the warmest part of the day, the effect is the reverse; it causes the temperatures below to differ still more from the temperatures above, and hence to increase the rate of diminution of temperature with increase of altitude. In the diurnal oscillations the rate near the surface at night from the effect of nocturnal cooling is reversed for some distance above the Earth's surface, the temperature being greater above than at the surface. As the Earth cools, the air in contact also cools when the air is calm, until the surface and likewise the lower air strata are cooled very low and the law of decrease of temperature is reversed. It is different during the day. The increase of the temperature of the Earth's surface, and of the lower strata in contact, brings about a state of unstable equilibrium from which at once arises a vertical interchange of air, by means of ascending and descending currents, which tend to equalize, in some measure, the temperatures above and below, so that, although the Earth's surface may be heated to a much higher temperature than the air immediately above, the decrease of temperature with increase of altitude never becomes very much greater than that of about 1° C. for 100 meters, corresponding to the initial state of unstable equilibrium. The effect of the heat of the Earth's surface cannot be confined to the lower strata merely, as that of the cooling of the surface is, but, as soon as the first stratum in contact with the Earth is heated, the effect is carried to those above.

Sprüng also refers in his meteorology to the same subject and states that the inversion of the ordinary temperature relations takes place occasionally, and usually during periods of very high pressure, and when the amount of cloud and humidity is abnormally small. The cause of the increased temperature at a higher elevation is ascribed to compression of the air.

The following extract from an article on Climate in the *Encyclopædia Britannica* (written by A. Buchan, Esq.), I believe, fairly represents the opinion of English meteorologists on this subject:—

"These results which only affect the mean daily temperature in different seasons, and which are due exclusively to differences of absolute height, though of the greatest possible practical importance, yet leave untouched a whole field of climatological research—a field embracing the mean temperature of different hours of the day at different heights, for an explanation of which we must look to the physical configuration of the earth's surface and to the nature of that surface, whether rock, sand, black soil, or covered with vegetation.

"Under this head by far the most important class of conditions are those which result in extraordinary modifications, amounting frequently to subversions of the law of the decrease of temperature with the height. This will perhaps be best explained by supposing an extent of country diversified by plains, valleys, hills and table-lands to be under atmospheric conditions favourable to rapid cooling by nocturnal radiation. Each part being under the same meteorological conditions, it is evident that terrestrial radiation will proceed over all at the same rate, but the effects of radiation will be felt in different degrees and intensities in different places. As the air in contact with the declivities of hills and rising grounds becomes cooled by contact with the cooled surface, it acquires greater density and consequently flows down the slopes and accumulates on the low-lying ground at their base. It follows, therefore, that places on rising ground are never exposed to the full intensity of frosts at night; and the higher they are situated relatively to the immediately surrounding district the less are they exposed, since their relative elevation provides a ready escape downwards for the cold air almost as speedily as it is produced. On the other hand, valleys surrounded by hills and high grounds not only retain their own cold of radiation, but also serve as reservoirs for the cold heavy air which pours down upon them from the neighbouring heights. Hence mist is frequently formed in low situations whilst adjoining eminences are clear. Along low-lying situations in the valleys of the Tweed and other rivers of Great Britain, laurels, araucarias, and other trees and shrubs were destroyed during the great frost of Christmas 1860, whereas the same species growing on relatively higher grounds escaped, thus shewing by incontestible proof the great and rapid increase of temperature with height at places rising above the lower parts of the valleys.

"This highly interesting subject has been admirably elucidated by the numerous meteorological stations of Switzerland. It is there observed in calm weather in winter, when the ground becomes colder

than the air above it, that systems of descending currents of air set in over the whole face of the country. The direction and force of these descending currents follow the irregularities of the surface and, like currents of water, they tend to converge and unite in the valleys and gorges, down which they flow like rivers in their beds. Since the place of these air-currents must be taken by others, it follows that on such occasions the temperature of the tops of mountains and high grounds is relatively high, because the counter-currents come from a great height and are therefore warmer. Swiss villages are generally built on eminences rising out of the sides of the mountains with ravines on both sides. They are thus admirably protected from the extremes of cold in winter, because the descending cold air-currents are diverted aside into the ravines and the counter-currents are constantly supplying warmer air from the higher regions of the atmosphere.

"Though the space filled by the down-flowing current of cold air in the bottom of a valley is of greater extent than the bed of a river, it is yet only a difference of degree, the space being in all cases limited and well defined, so that in rising above it in ascending the slope the increased warmth is readily felt, and, as we have seen, in extreme frosts the destruction to trees and shrubs is seen rapidly to diminish. The gradual narrowing of a valley tends to a more rapid lowering of the temperature for the obvious reason that the valley thereby resembles a basin almost closed, being thus a receptacle for the cold air-currents which descend from all sides. The bitterly cold furious gusts of wind which are often encountered in mountainous regions during night are simply the outrush of cold air from such basins."

The most important recent contribution to the subject is a memoir on "Mountain Meteorology" by Professor William Morris Davis, Harvard College, Cambridge, U. S., in which he gives a summary of the facts up to date. In this he points out that examples of inversion of temperature relations are by no means rare in mountain districts in Europe and America, and that they are most common in winter. He quotes a monograph of Professor Hann's which states that the inversion is best shewn in hill-enclosed valleys where the air stagnates and is not replaced by air from above. Such inversions, it is there pointed out, are most frequent during the passage of areas of high pressure or the prevalence of anti-cyclonic conditions. The unusual warmth in the hill regions is shewn to be an effect of the compression of the descending air, whilst the cold in the valleys and low ground is due to other causes, and takes place in spite of the descent of air into it. A remarkable example in Europe of the inversion due to the prevalence of anti-cyclonic conditions occurred in December 1879

and was the subject of numerous investigations. Hann, in his paper on Die Temperatur Verhältnisse des Decembers 1879, investigated the matter very thoroughly. He made in that paper a comparison between the temperature of Klagenfurth (in the valley) and Hochober (at an elevation of 5215 ft. above Klagenfurth), and states that from December 6th to 18th it was continually warmer on the mountain than in the valley. The mean difference of the 7 A. M. temperatures for these thirteen days was 23·4° in favour of the mountain, at 2 P. M. 21·2°, and at 9 P. M. 19·6° F. Other examples are given in the same memoir of the abnormal vertical temperature conditions which occasionally obtain in Europe and America. Buchan, in a paper published in the Journal of the Scottish Meteorological Society, states that on the 31st December 1883 the temperature at the top of Ben Nevis was 4·5° higher than at Fort William. In this case too pressure was abnormally high. Woeikoff, the Director of the Russian Meteorological Department, on the strength of certain evidence, believes there is a persistent inversion of temperature during the winter in Siberia. Inversion of temperature is also said to be of common occurrence on Mount Washington (in Massachusetts). It is also occasionally shewn by the Pikes' Peak Observations. That mountain has an elevation of 14134 feet and is 8,840 feet higher than Denver. Professor Loomis gives 39 examples of higher temperature at the top of Pikes' Peak than at Denver from four years' observations. In the most extreme cases the differences of temperature amounted to 15° and 16°. It may be noted that these inversions all occurred during the winter.

It is not necessary to quote from the earlier meteorological works of Herschel, Buchan, &c., as they only recognize the occasional occurrence of lower temperature at night in valleys than on the adjacent hills, and ascribe the effect chiefly to the flow of cold air down the sides of the hills.

Recent meteorological writings in some cases continue to ascribe the cooling almost entirely to the descent of the air from the mountain sides into the valleys, and state that the inversion of the vertical temperature relations is of comparatively frequent occurrence in mountanous districts. The facts about to be given, however, appear to indicate the probability that these inverse relations which are exhibited by the mountain observations are due to general conditions that prevail in plains as well as in mountain districts, and hence that similar relations may obtain much more generally and widely than is usually supposed. No distinct statement, however, occurs to this effect, so far as I am aware, and the evidence of inversion of the vertical temperature relations is, in the absence of suitable balloon observations, confined to differences be-

tween mountain stations and the neighbouring valley or other low-lying stations. They are hence assumed to be phenomena restricted to hills and the neighbouring confined valleys and hence of limited extent. The explanation generally given, whilst making the inversion a phenomenon of terrestrial radiation, attaches much weight to the flow of cool air down the mountain sides into the valleys, and hence suggests that it is peculiar to mountain districts.

The present paper will, I believe, prove that inversion may occur over very large plain areas, and that it has, in some cases at least, little or nothing whatever to do with air motion between hills and valleys. It will also shew that the vertical temperature relations during the cold weather in Northern India are much more variable and complicated than they have been hitherto supposed to be, and that the descensional motion which accompanies cooling of the air during the night in fine clear weather is almost entirely one of slow compression, and is not the opposite of the ascensional and convective movement which takes place largely during the day, or, in Professor Ferrel's suggestive words, "the effect of the heating of the earth's surface is not confined to the lower strata merely, as that of the cooling of the surface is, but as soon as the first stratum in contact with the earth is heated, the effect is carried to these above." The principle is, I believe, of great importance generally, and more especially in India, in connection with the production of the dry winds of the Gangetic plain during the hot weather months of March, April, and May.

The paper consists of three parts;—1st, a statement of the normal meteorological temperature conditions of the plain and hill districts of Upper India in the month of January and of certain meteorological conditions and actions upon which temperature mainly depends; 2nd, a statement of the more striking abnormal temperature relations of the month of January 1889 and of the cold weather period generally in Upper India; and 3rd, a discussion of the causes which produce these unusual temperature conditions and variations.

It may be premised that one or two of the actual observations quoted for the month of January 1889 appear to me to be somewhat doubtful. I have, however, thought it best to include them, as it is on the whole more probable that they are exaggerated examples of the peculiar temperature relations about to be discussed than that they represent instrumental or observational errors.

The following table gives the average maximum temperatures of the month of January of certain selected pairs of stations in Upper India, each pair consisting of a hill station and the nearest plain station at which there is an observatory:—

Names of pairs of stations.	Difference of elevation.	Distance in miles.	Mean maximum temperature for January.		Difference of maximum temperature of the plain and hill stations.	Average rate of change of temperature vertically at the hottest period of the day per 1000 feet.
			Hill station.	Plain station.		
Quetta Jacobabad	5300	163	51·6°	73·3°	21·7°	4·1°
Murree Rawalpindi	4700	30	47·8°	63·3°	15·5°	3·3°
Simla Ludhiana	6200	80	51·2°	67·6°	16·4°	2·7°
Chakrata Roorkee	6200	58	50·1°	69·4°	19·3°	3·1°
Ranikhet Bareilly	5500	90	54·0°	70·1°	16·1°	2·9°
Dhubri Darjeeling	7300	116	44·3°	73·4°	29·1°	4·0°
Deesa Mount Abu	3500	40	67·1°	82·2°	15·1°	4·3°
Pachmarhi Hoshangabad	2500	48	70·6°	80·1°	9·5°	3·8°

A full description of these observatories and of the more important local peculiarities of exposure will be found in Mr. Blanford's Report on the Meteorology of India for 1885. It will suffice here to point out that both Ranikhet and Simla are situated at some distance within the first line of hills, whereas Murree and Chakrata are practically on the crest of the first line of elevations overlooking the plains. Assuming these as more typical of the relations between hills and plains, the preceding data shew that in Upper India the temperature near the hills decreases vertically with elevation at the hottest time of the day in the month of January very nearly 3° in 1000 feet up to a height of 7000 feet at least. The remarkably low day temperature at Darjeeling during this period as shewn by the table appears to be due to the following causes, of which the first is probably the most influential.

1*st.*—The great humidity and large amount of fog at that station (as in the Eastern Himalayan districts generally) in January, in which respects it contrasts strikingly with the hill stations of Upper India, where the air is, except in stormy weather, very dry and clear.

2*nd.*—The contiguity of the immense snow mass of Kanchinjunga and neighbouring mountains, which include some of the highest peaks in the Himalayas. This area embraces an enormous extent of snow covered ground, the southern edge of which (in summer) is at a distance as the crow flies of not more than 30

or 35 miles from Darjeeling. The first line of snows is at a distance of at least 45 or 50 miles from Simla and Murree and at a distance of about 40 miles from Chakrata. The neighbouring areas of perpetual snow are of greater elevation and of considerably less extent in the case of all these stations than of Darjeeling and hence exercise a much smaller influence.

As the meteorological conditions of Darjeeling are thus essentially different from those of the hill stations of Upper India, it will be excluded from the final discussion, although data for it are given in the tables for the preliminary comparisons.

The following table gives the average minimum temperature data for the same pair of stations for the month of January.

Names of pairs of stations.	Difference of elevation.	Distance in miles.	Mean minimum temperature for January.		Difference of minimum temperature of plain and hill stations.	Average rate of decrease of temperature at the coldest period of the night per 1000 ft.
			Hill station.	Plain station.		
Quetta ... Jacobabad ...	5300	163	29·2°	42·8°	13·6°	2·6°
Murree ... Rawalpindi ...	4700	30	35·5°	37·9°	2·4°	0·5°
Simla ... Ludhiana ...	6200	80	36·4°	43·5°	7·1°	1·1°
Chakrata ... Roorkee ...	6200	58	35·7°	44·2°	8·5°	1·4°
Ranikhet ... Bareilly ...	5500	90	39·5°	45·9°	6·4°	1·2°
Dhubri ... Darjeeling ...	7300	116	34·6°	53·5°	18·9°	2·6°
Deesa ... Mount Abu ...	3500	40	50·9°	51·1°	0·2°	0
Pachmarhi ... Hoshangabad ...	2500	48	47·2°	52·5°	5·3°	2·1°

This table shews that at all these stations the average difference of temperature at night is much smaller than by day. The rate of difference is greatest in the cases of Quetta and Jacobabad, Pachmarhi, and Hoshangabad, and Darjeeling and Dhubri, for which it averages about 2° or less than half of the rate of difference for the maximum temperature. The result for Deesa and Mount Abu is so anomalous as to point to peculiar local conditions, the nature of which have, however, not yet been determined.* In the case of the pairs of stations in Upper India the average rate of change of temperature with

* I have recently (January 1890) visited these two stations: the temperature observations are carefully recorded, and are taken under the same conditions of ex-

elevation at night in January varies from 0·5° for Murree and Rawalpindi to 1·4° for Chakrata and Roorkee, and averages 1°, that is, little more than one third of the day rate of decrease of temperature vertically.

These two tables may hence be summarized as follows :—

(*a*). The rate of decrease of temperature with elevation at the time of maximum day temperature in the month of January averages 3° per 1,000 feet in the Western Himalayas and 4° per 1,000 feet in the Eastern Himalayas up to 7,000 feet and in the Aravalli and Vindhya Hills and perhaps also in Beluchistan.

(*b*). The rate of decrease of temperature with elevation at night or at the time of minimum temperature averages 1° per 1,000 feet in the Western Himalayas, 2° per 1,000 feet in the Eastern Himalayas and Vindhyas, and $2\frac{1}{2}$° per 1,000 feet in Beluchistan.

An interesting point in connection with the night temperature in the plains of Upper India is shewn by the data of the following table. The first column gives the average minimum temperature of the month of January at stations nearest to the hills and the second that of stations at a greater distance than those of the first column.

Plain stations near hills.	Mean minimum temperature for January. (A.	Plain stations at considerable distance from hills.	Mean minimum temperature for January. (B.)	Difference between mean temperature of the two stations for each pair. A—B.	Horizontal distance between pair of stations.
Rawalpindi ...	37·9°	Peshawar	39·1°	— 1·2°	100 miles
Sialkot ...	42·9°	Lahore	42·4°	0·5°	75 ,,
Ludhiana ...	43·5°	Sirsa	42·4°	1·1°	190 ,,
Roorkee ...	44·2°	Meerut	44·4°	— 0·2°	60 ,,
		Delhi			90 ,,
Bareilly ...	45·9°	Agra			120 ,,
		Lucknow	45·9°	0°	125 ,,
		Allahabad	47·5°	1·1°	125 ,,
Gorakhpur ...	48·6°	Benares	47·9°	0·7°	100 ,,
Dhubri ...	53·5°	Berhampore	53·2°	0·3°	150 ,,

The geographical relations between Rawalpindi and Peshawar are quite different from those of the other pairs of stations, which are all situated in the great plain of Northern India stretching along the foot of the Himalayas from the North Punjab to East Bengal.

posure as at other stations in India. Several series of hourly observations of temperature during the night have been recently taken, and, as they confirm the conclusions of the present paper, I hope to discuss them in a brief paper to be submitted to the Society shortly.

The differences here are small and to some extent undoubtedly depend upon the peculiarities of position of the observatories at the observing stations. Their general uniformity, however, appears to indicate clearly that the lowest minimum temperatures in January in the great Northern or Gangetic plain of India are not found at and near the foot of the hills, but in the midst of the great plain at a distance of 100 to 200 miles from the Himalayas, or, as it might be more fully expressed, the axis of minimum or lowest night temperature in Northern India in the month of January runs nearly parallel to the Himalaya mountains at a distance from their southern base varying from 100 to 200 miles. This fact seems to be of great importance as it shews that, whatever the rapid cooling in these plains may be due to, it cannot be ascribed to the cause usually assigned for the greater cold in valleys than in hill sides, *viz.*, the sinking of air cooled by contact with the sides of the hills into the valleys. For it is not possible that the cooled air sinking down with a motion which is imperceptible to the anemometer or senses should produce the greatest effects at distance of one or two hundred miles from the foot of the hills and where the temperature is higher by day, as is shewn by the following table:—

Plain stations near hills.	Mean maximim temperature January. (A.)	Plain stations at considerable distance from hills.	Mean maximum temperature January. (B.)	Difference between mean temperature for the two stations of each pair. (B—A.)	Horizontal distance between stations.
Rawalpindi ...	63·3°	Peshawar	64·0°	0·7°	100 miles
Sialkot ...	66·7°	Lahore	67·6°	0·9°	75 ,,
Ludhiana ...	67·6°	Sirsa	70·8°	3·2°	100 ,,
Roorkee ...	69·4°	Meerut	70·1°	0·7°	60 ,,
Bareilly ...	70·1°	Delhi	71·0°	0·9°	90 ,,
		Agra	73·4°	3·3°	120 ,,
		Lucknow	73·8°	3·7°	125 ,,
Gorakhpur ...	73·4°	Allahabad	73·6°	0·2°	125 ,,
		Benares	74·7°	1·3°	100 ,,
Dhubri ...	73·4°	Berhampore	78·2°	4·8°	150 ,,

The following table gives mean daily temperature (*i. e.*, means of the maximum and minimum temperatures) data of the month of January for the same pairs of stations:—

Pairs of stations.	Difference of Elevation.	Mean daily temperature January.		Difference.	Rate of decrease per 1000 ft.
		Hill station. (A.)	Plain station. (B.)	B.—A.	
Quetta ... ... Jacobabad ...	5300	40·4°	58·0°	17·6°	3·3°
Murree ... ... Rawalpindi ...	4700	41·7°	50·6°	8·9°	1·9°
Simla ... ... Ludhiana ...	6200	43·8°	55·6°	11·8°	1·9°
Chakrata ... Roorkee	6200	42·8°	56 8°	14·0°	2·3°
Ranikhet ... Bareilly	5500	46·7°	58·0°	11·3°	2·1°
Dhubri ... ... Darjeeling ...	7300	39·5°	63·5°	24·0°	3·3°
Deesa ... ... Mount Abu ...	3500	59·0°	66·7°	7·7°	2·2°
Pachmarhi ... Hoshangabad ...	2500	58·9°	66·3°	7·4°	3·0°

The data of this table are not of much importance in connection with the present discussion. They shew that the average decrease of temperature with elevation (as determined from day and night observations) varies from 1·9° per 1000 feet in the North-West Himalayas to 3·3° per 1000 feet in Beluchistan and Sind, where the general climatic conditions at that time are apparently very similar to those of the Punjab.

The following table gives the average daily range of temperature at the plain and hill stations of each pair of stations.

Pairs of stations.	Average daily range of temperature for January.		Ratio of daily range at plain station to that at hill station. $\frac{(B.)}{(A.)}$
	Hill station. (A.)	Plain station. (B.)	
Quetta ... ... Jacobabad	22.4°	30·5°	1·4°
Murree ... ... Rawalpindi	12·3°	25·4°	2·1°
Simla ... ... Ludhiana	14·8°	24.1°	1·6°
Chakrata ... . Roorkee	14·4°	25·2°	1·7°
Ranikhet ... ... Bareilly	14·5°	24·2°	1·7°
Darjeeling ... ... Dhubri	9·7°	19·9°	2·0°
Mount Abu ... ... Deesa	16·2°	31·1°	1·9°
Pachmarhi ... ... Hoshangabad	23·4°	27·6°	1·2°

This shews that in Upper India the average daily range of temperature in January is very nearly twice as great in the plains as at the adjacent hill stations at elevations of 6000 to 7000 feet. The ratio is even greater in the Eastern Himalayas, the daily range of temperature probably varying from $2\frac{1}{2}$ to 3 times as much in Assam and North Bengal as it is in the adjacent Himalayas at an elevation of 7000 feet. In the hills of Upper India this diminished range of temperature cannot be ascribed to any deficiency of radiating power, either of the sun or of the earth at this period of the year, for the air is much clearer (free from dust, smoke, etc.) and drier in the hills than the plains in Upper India, and, as shewn in the following tables, solar heat is absorbed more largely by day and terrestrial heat given out more rapidly by night in the hills than in the adjacent plain districts. The only measure for the radiating power in either case that we at present possess is the average daily difference between the readings of the solar radiation thermometer and maximum thermometer in the one case and between the readings of the grass radiation thermometer and minimum thermometer in the other. The following two tables give these differences for the pair of stations selected.

Names of pairs of stations.	Average difference between readings of solar radiation and maximum thermometer in shade. January.		Ratio of difference for hill station to that for plain station.
	Hill stations. A.	Plain station. B.	$\frac{A.}{B.}$
Quetta ... ... / Jacobabad	62·9°	59·9°	1·1°
Murree ... ... / Rawalpindi	60·4°	50·6°	1·2°
Simla ... ... / Ludhiana	62·7°	51·5°	1·2°
Chakrata ... ... / Roorkee	67·0°	54·3°	1·2°
Ranikhet ... ... / Bareilly	60·7°	48·0°	1·3°
Darjeeling ... ... / Dhubri	54·4°	50·1°	1·1°
Mount Abu ... ... / Deesa	62·2°	53·4°	1·2°
Pachmarhi ... ... / Hoshangabad	61·8°	55·8°	1·1°

This table establishes conclusively that the average direct heating power of the sun is greater at the hill stations in January than at the corresponding plain stations. And, if it might be assumed that the relative intensity in the two cases is, roughly speaking, proportional to the ratios given in the preceding table, the heating power of the sun at an elevation of 7000 feet in the Himalayas is on the average about one-fifth greater than at the level of the adjacent plains, or, in consequence of the absorbing action of the lower strata, the sun is one-sixth less powerful in heating the earth's surface at the level of the plains than it is at that of the hill stations of the Himalayas.

The following table gives similar data for nocturnal radiation from the Earth's surface:—

Names of pairs of stations.	Average difference between grass radiation thermometer readings and those of minimum in shade thermometer for January.		Ratio of difference for hill station to that of corresponding plain station $\frac{A.}{B.}$
	Hill station. A.	Plain station. B.	
Quetta ... ... Jacobabad	10·4°	10·1°	1·0°
Murree ... ... Rawalpindi	11·4°	7·3°	1·6°
Simla ... ... Ludhiana	12·2°	9·8°	1·3°
Chakrata ... ... Roorkee	9·5°	7·2°	1·3°
Ranikhet ... ... Bareilly	13·0°	8·3°	1·6°
Darjeeling ... ... Dhubri	10·3°	6·9°	1·5°
Mount Abu ... ... Deesa	17·1°	9·1°	1·9°
Pachmarhi ... ... Hoshangabad	12·0°	8·5°	1·4°

These figures show that nocturnal radiation goes on much more rapidly at the hill stations than at the adjacent plain stations, and that the ratios as measured by the differences given in the preceding table are much greater than the ratios in the corresponding tables for solar radiation. Taking the average of all the stations as a rough approximation, they appear to indicate that nocturnal radiation goes on upwards of 50 per cent. more rapidly at the hill stations than at the adjacent plain stations.

This result is undoubtedly in part due to the greater length of the night (or period of effective terrestrial radiation) than of the day in the month of January in Northern India, and perhaps also to the greater clearness and homogeneity of the atmosphere arising from the stillness of the air and absence of wind at night as compared with the day. It will, however, be presently seen it is probable that the mean monthly minimum temperature at the hill stations represent an average of conditions different from that at the plain stations and hence the figures given above are almost certainly of little value for the comparison of nocturnal radiation in the plains and hills of Northern India. It is, however, evident that the figures as a whole support the inferences based on the known laws of radiation from cooling bodies. It is certain therefore that in clear weather in January, if there were no other action than mere radiation and heating and cooling of the adjacent air by contact with the Earth's surface, the Earth's surface and adjacent air would be heated to a greater extent by day and cooled to a larger amount at night at the hill stations than at the plain stations and hence the daily range of temperature might be expected on this account alone to be considerably greater (probably from 10° to 20°) at the hill stations than at the plains.

The following table gives the average cloud amount during the month at the selected stations.

Names of pairs of stations.	Mean proportion of cloud in January.		Ratio of cloud proportion of hill station to plain station.
	Hill station. A.	Plain station. B.	$\frac{A.}{B.}$
Quetta ... ... Jacobabad	4·4	2·6	1·7
Murree ... ... Rawalpindi	5·8	4·4	1·3
Simla ... ... Ludhiana	5·6	3·9	1·4
Chakrata ... ... Roorkee	4·8	3·4	1·4
Ranikhet ... . Bareilly	4·1	3·0	1·4
Darjeeling ... ... Dhubri	5·5	1·7	3·2
Mount Abu ... ... Deesa	2·6	2·2	1·2
Pachmarhi ... ... Jubbulpore	2·3	2·2	1·0

The following table gives the average humidity of the month of January at the same pairs of stations.

Names of pairs of stations.	Mean relative humidity in January.		Ratio of average humidity of hill station to that of plain station.
	Hill station. A.	Plain station. B.	$\frac{A.}{B.}$
Quetta ... ... / Jacobabad	67	47	1·4
Murree ... ... / Rawalpindi	59	73	0·8
Simla ... ... / Ludhiana	61	68	0·9
Chakrata ... ... / Roorkee	63	65	1·0
Ranikhet ... ... / Bareilly	63	67	0·9
Darjeeling ... ... / Dhubri	79	77	1·0
Mount Abu ... ... / Deesa	40	38	1·0
Pachmarhi ... ... / Jubbulpore	54	60	1·1

These tables show that while the amount of cloud is considerably greater at the hill-stations that at the plain stations in Upper India, the air is actually on the average drier or less humid in the former case. As these results are based on day observations chiefly, it is probable if night observations of equal weight were included the difference would be even more marked.

The following is a brief general summary of the mean temperature conditions at the level of the hill stations in the Himalayas and on the adjacent plains.

(1.) The rate of decrease with elevation of the average daily temperature of the month of January is very approximately $2\frac{1}{8}°$ per 1,000 feet or more exactly 1° per 470 feet. The rate of decrease is, however, very irregular, varying not only from day to day but also from hour to hour during the day. The rate of decrease of the average minimum or night temperature with elevation in Upper India is only about $1\frac{1}{4}°$ per 1,000 feet and of the average maximum temperature is 3° per 1,000 feet.

(2.) The daily range of temperature is much less at the hill stations than in the adjacent plain districts and is little more than half that at the adjacent plain stations.

It also follows from the previous remarks that any explanation of the

smaller average difference of the minimum temperature at the hills and at the adjacent plain stations (or of the small night vertical range of temperature compared with the day) must recognize :—

(*a.*) That the air is on the average less humid at the hills than at the adjacent plain stations in Upper India.

(*b.*) That there is on the average more cloud at the hill stations.

(*c.*) That the intensity of solar radiation is considerably greater at the hill stations, probably at least 20 per cent. greater.

(*d.*) And that the intensity of radiation from the earth's surface at night is very considerably greater at the hills than the adjacent plains.

We now proceed to give data for the same pairs of stations for January 1889.

The following tables give the comparative temperature data of eight hill stations in Northern India and of the eight nearest plain stations at which there are observations for that month.

The first table gives the maximum temperature of each day of the month of January 1889 and the variation from the normal. The variations are obtained from the daily means of the past eleven years (1878-88) smoothed so as to give a fairly regular series. The positive sign affixed to a number in this table indicates that the actual temperature was above the normal and a minus sign that it was below it.

The second table gives similar date for the minimum temperature of the same 16 stations for the same period.

The third table gives the daily difference of the maximum temperatures for each of eight pairs of stations consisting of a hill station and adjacent plain station. In every case the maximum temperature at the plain stations exceeds that at the neighbouring hill station.

The fourth table gives the difference between the minimum temperature registered at each of the eight selected hill stations and the neighbouring plain stations. In the majority of cases the minimum temperatures at the plain stations exceed those at the plain stations in which case no sign is prefixed to the number. In a few cases the latter temperatures are the greater and this is indicated by the minus sign prefixed to the number.

Table I. giving the maximum temperature of the 24 hours preceding 8 A. M. at 16 stations for the month of January, 1889 and the variations from the normal day by day.

January.	Quetta.		Jacobabad.		Murree.		Rawalpindi.		Simla.		Ludhiana.		Mussooree.		Roorkee.		Ranikhet.		Bareilly.		Darjeeling.	
	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.
1	51·6	−2·7	75·4	+1·5	53·2	+2·6	64·1	−0·1	54·5	+1·5	68·2	+0·2	54·0	?	68·8	−1·2	60·7	+4·0	72·2	+1·6	4·8	−0·4
2	60·5	+6·7	73·4	−0·2	57·1	+6·3	69·1	+4·5	56·7	+4·4	69·7	+1·8	54·0	?	70·8	+0·6	62·7	+6·8	73·7	+3·0	43·6	−0·9
3	60·5	+7·3	74·4	+1·3	59·1	+8·5	70·5	+6·0	61·7	+9·4	75·2	+7·1	60·0	?	70·8	+0·7	66·1	+10·5	71·2	+0·5	46·8	+2·3
4	56·6	+4·0	76·9	+4·2	58·6	+9·2	68·6	+4·5	66·9	+14·7	77·7	+9·5	63·5	?	72·3	+2·3	71·1	+15·7	77·2	+6·7	50·9	+6·8
5	50·6	−2·0	76·9	+4·5	49·2	−0·5	69·1	+4·9	57·3	+4·8	73·2	+5·1	61·0	?	72·8	+2·8	66·1	+10·7	75·2	+4·7	52·3	+7·9
6	56·1	+3·4	77·4	+5·0	52·7	+2·2	69·1	+4·5	50·1	−3·1	73·2	+5·3	53·0	?	71·8	+2·1	62·7	+7·2	75·2	+4·9	47·0	+1·7
7	56·6	+3·0	75·4	+2·8	56·6	+5·8	70·0	+5·4	54·1	+0·1	75·7	+8·0	52·0	?	75·8	+6·1	57·8	+2·0	76·2	+6·2	45·7	−0·6
8	57·1	+3·6	78·4	+5·5	54·7	+3·8	66·6	+2·2	59·7	+5·2	72·7	+5·2	56·0	?	73·3	+3·4	63·2	+7·1	75·2	+5·1	46·4	−0·3
9	60·5	+7·3	78·9	+5·7	58·6	+7·7	72·0	+7·7	58·2	+3·7	72·2	+5·1	60·0	?	71·8	+2·3	62·2	+6·2	72·7	+2·7	46·6	−6·6
10	59·1	+6·5	72·9	−0·5	55·2	+4·4	64·6	+0·4	57·7	+4·0	73·2	+6·2	57·5	?	70·3	+0·8	62·2	+6·1	75·2	+5·2	44·8	−2·7
11	49·6	−1·9	77·1	+4·6	42·7	−7·1	70·5	+6·2	48·5	−4·3	69·2	+2·1	52·0	?	70·3	+0·8	58·2	+2·6	75·2	+5·6	49·1	+2·2
22	46·5	−4·1	77·4	+4·2	43·7	−5·2	64·1	+0·2	50·8	−1·0	72·2	+5·1	52·0	?	76·8	+7·2	58·2	+3·0	77·7	+8·1	45·8	−0·6
13	42·0	−8·3	70·4	−2·6	42·2	−6·2	61·6	−2·1	50·7	−0·3	66·7	−0·4	58·5	?	71·8	+2·1	55·3	+0·6	76·2	+6·7	?	?
14	42·5	−8·2	72·4	−0·5	42·7	−5·5	60·1	−3·6	40·5	−10·0	67·7	+0·8	52·0	?	70·8	+1·1	55·3	+1·0	76·2	+6·6	50·1	+5·2
15	41·5	−9·4	72·4	−0·7	40·7	−6·9	62·6	−0·8	41·8	−8·6	70·7	+3·6	50·0	?	74·3	+5·0	54·3	+1·0	75·2	+5·9	50·3	+6·1
16	41·5	−10·2	67·4	−5·8	42·7	−5·1	61·1	−2·0	44·3	−6·2	70·2	+3·0	54·5	?	70·3	+1·0	49·3	−4·1	71·2	+1·6	49·5	5·1
17	33·4	−19·2	69·9	−3·1	32·1	−16·0	55·2	−8·1	44·3	−6·6	71·2	+4·0	53·5	?	75·3	+6·0	47·4	−6·3	66·1	−3·6	?	?
18	31·4	−21·6	70·9	−2·5	42·7	−5·4	61·1	−2·2	49·6	−1·5	72·7	+5·2	50·0	?	76·3	+7·6	57·3	+4·6	76·7	+7·1	47·5	+3·2
19	32·4	−20·7	68·9	−5·0	40·1	−7·7	58·6	−4·8	50·1	−1·0	71·2	+3·1	50·0	?	74·8	+6·0	51·3	−1·6	76·2	+6·8	51·3	+7·2
20	53·6	+0·6	69·9	−4·3	48·7	+0·9	65·1	+1·6	51·5	+0·3	67·2	−1·0	50·5	?	73·8	+4·6	57·3	+4·0	77·2	+7·6	51·1	+6·4
21	56·1	+3·2	71·4	−3·0	64·1	+16·8	69·1	+5·9	59·5	+8·5	74·2	+6·4	51·5	?	73·8	+5·1	64·1	+11·2	74·2	+4·7	54·1	+9·3
22	53·6	+0·9	74·4	−0·3	55·7	+9·0	66·1	+3·3	62·3	+11·6	73·7	+5·6	60·5	?	75·3	+6·6	66·1	+13·7	73·2	+3·6	45·2	+0·7
23	45·5	−7·1	74·4	−0·1	37·6	−8·7	61·1	+1·1	50·3	−0·3	66·2	−1·6	50·5	?	73·8	+6·7	64·1	+10·6	76·2	+6·2	46·0	+1·9
24	46·0	−6·0	76·9	+3·0	42·2	−3·5	67·1	+5·2	42·2	−8·4	60·7	−7·0	46·0	?	64·8	−4·4	57·3	+3·8	61·1	−9·3	48·0	+4·0
25	51·6	+0·1	73·4	0	47·7	+1·8	67·6	+5·4	43·1	−7·1	66·2	−1·6	43·0	?	65·8	−3·2	49·3	−3·9	62·6	−8·0	43·3	−0·4
26	49·6	−1·2	72·9	0	49·7	+4·2	65·1	+3·1	48·5	−1·4	69·2	+1·0	48·0	?	69.8	+0·5	54·3	+1·5	71·2	+0·3	48·1	+4·5
27	43·0	−6·8	76·4	+3·7	46·7	+1·4	63·1	+1·0	44·3	−5·4	66·2	−1·6	48·5	?	64·8	−4·4	53·3	+0·8	72·2	+1·1	47·5	+4·0
28	43·5	−5·5	70·4	−2·2	44·7	−0·3	58·1	−4·4	52·7	+3·1	69·7	+1·8	53·5	?	75·8	+6·4	58·2	+5·9	73·7	+2·7	43·2	−0·2
29	42·5	−6·0	70·4	−2·5	38·6	−6·7	54·2	−8·6	48·1	−1·4	59·7	−8·3	51·0	?	63·8	−5·6	58·2	+6·1	75·2	+4·2	46·0	+3·3
30	40·5	−7·7	66·4	−7·0	36·6	−8·4	52·7	−9·4	43·1	−6·0	63·2	−4·2	42·5	?	61·8	−7·5	58·2	+6·0	69·2	−1·4	50·1	+7·4
31	35·4	−13.2	70·4	−3·4	32·6	−13·1	54·2	−8·2	39·5	−9·3	61·2	−6·3	34·0	?	58·3	−11.1	57·3	+5·3	70·2	−0·2	42·1	0
Mean.	48·1	−3·7	73·4	+0·1	47·4	−0·7	63·9	+0·5	51·1	−0·3	69·7	+2·0	52·4	?	71·0	+1·6	58·7	+4·6	73·2	+3·1	47·5	+2·8

Table I.—Continued.

January.	Dhubri.		Abu.		Deesa.		Pachmarhi.		Hoshangabad.		General character of weather in Upper India.
	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation	
1	74·3	+1·0	68·1	+0·3	86·2	+3·4	70·9	+1·7	80·7	+2·3	Barometer rising, clear.
2	73·8	+0·8	72·6	+4·7	88·2	+5·2	71·4	+2·5	80·7	+2·6	Do. do. light clouds Punjab.
3	74·3	+1·4	73·1	+5·1	89·2	+6·3	72·3	+3·4	80·2	+2·0	Do. falling, cloudy plains and hills.
4	75·3	+2·3	71·6	+3·8	88·2	+5·5	74·8	+5·7	83·1	+4·5	Do. ,, cloudy Punjab and hills.
5	75·8	+2·7	67·6	−0·5	87·2	+4·4	75·8	+6·3	84·1	+5·1	Do. rising rapidly, skies cloudy.
6	74·3	+1·3	67·1	−1·0	86·2	+3·4	74·8	+4·7	85·1	+5·8	Do. do. skies clear.
7	77·3	+4·4	70·1	+1·9	89·2	+6·3	75·8	+5·4	84·1	+4·7	Do. do. do. do.
8	76·8	+3·8	73·6	+5·2	91·3	+8·6	74·8	+4·2	83·6	+4·0	Do. falling, no cloud.
9	74·3	+1·3	72·1	+4·0	93·3	+10·7	74·8	+3·9	84·6	+5·0	Do. do. light cloud.
10	75·3	+2·1	71·1	+3·6	91·3	+9·3	75·3	+4·2	85·6	+5·8	Do. do. do. do.
11	75·3	+1·9	68·1	+1·1	88·2	+7·1	77·7	+6·8	88·6	+8·8	Do. do. moderate cloud.
12	75·3	+1·6	67·6	+1·0	87·2	+6·4	75·8	+5·1	85·6	+5·8	Do. do. Skies clouded, especially over hills.
13	77·8	+4·2	66·1	−0·3	84·6	+3·6	74·8	+4·2	84·6	+4·9	Do. rising, Snow on hills.
14	75·8	+2·0	62·1	−4·5	82·1	+0·7	72·8	+2·4	81·6	+1·8	Do. do. clear plains, overcast hills.
15	77·3	+3·3	60·6	−6·5	80·1	−2·0	72·3	+2·1	79·7	−0·1	Do. do. do.
16	78·8	+4·7	60·6	−6·9	78·6	−4·0	74·8	+4·7	82·1	+2·4	Do. do. Snow falling on hills.
17	77·8	+3·6	64·1	−3·9	79·6	+3·6	77·7	+7·3	86·6	+6·6	Do. do. Generally clear.
18	78·8	+4·4	67·1	−1·1	83·6	+0·3	77·7	+7·2	87·6	+7·2	Do. falling.
19	78·8	+4·7	66·1	−1·9	80·1	−3·3	76·3	+5·8	87·6	+7·2	Do. rising.
20	79·8	+5·9	64·1	−3·7	77·1	−6·2	75·8	+5·1	86·6	+6·1	Do. falling, clear.
21	77·8	+4·1	70·1	+2·5	86·2	+3·0	77·3	+6·5	83·6	+3·0	Do. do.
22	76·3	+2·8	73·6	+6·0	92·3	+9·4	78·7	+7·9	88·6	+8·1	Do. do. Snow storm Murree and Quetta.
23	77·8	+4·4	71·6	+3·8	89·2	+6·6	79·7	+8·6	91·1	+10·5	Do. do. Snow storm hill stations.
24	78·3	+4·9	63·1	−4·8	83·1	−0·1	78·7	+7·2	88·6	+7·5	Do. rising rapidly. Snow on hills, rain on plains.
25	73·3	−0·1	64.1	−3·1	83·1	+0·5	71·4	−0·2	80·2	−1·1	Do. rising.
26	75·8	+2·3	68·1	+1·7	87·2	+5·3	75·8	+4·4	84·6	+3·1	Do. do. moderate cloud Upper India.
27	76·3	+2·9	70·1	+4·5	89·2	+7·8	75·3	+4·1	88·1	+6·8	Do. falling, moderate cloud.
28	77·8	+4·6	70·6	+5·7	87·7	+6·8	79·7	+8·6	88·1	+7·1	Do. falling rapidly, rain N. Punjab.
29	78·3	+5·3	74·1	+9·6	91·3	+10·9	80·7	+9·6	88·6	+8·0	Do. falling very rapidly, rain & snow hills, overcast N. India.
30	78·8	+5·8	63·1	−1·6	84·6	+4·1	81·7	+10·5	90·6	+9·9	Do. falling Heavy snow storms on hills.
31	65·7	−7·2	57·1	−8·3	78·1	−2·8	75·3	+4·0	85·6	+5·1	Do. rising very rapidly, snow on hills.
Mean.	76·2	+2·8	67·7	+0·5	85·9	+3·6	75·8	+5·3	85·2	+5·2	

Table II. giving the minimum temperature daily during the month of January 1889 at 16 stations and the variations from the normal day by day.

Date.	Quetta.		Jacobabad.		Murree.		Rawalpindi.		Simla.		Ludhiana.		Mussooree.		Roorkee.	
	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.
1	26·8	−0·6	38·6	−2·1	37·7	+0·8	30·9	−3·8	40·3	+3·5	41·0	−0·4	42·0	?	38·9	−3·1
2	31·8	+4·4	40·6	−0·3	45·8	+8·6	37·4	+2·1	45·1	+8·2	41·0	−0·6	41·5	?	38·9	−3·6
3	30·3	+2·1	38·6	−2·3	49·3	+12·6	36·9	+0·8	48·4	+11·6	45·6	+3·6	42·0	?	36·3	−6·5
4	33·8	+5·9	38·6	−2·2	44·8	+8·4	39·4	+3·1	46·1	+9·0	41·5	−0·6	48·5	?	45·1	+2·2
5	23·8	−3·8	41·6	+1·0	34·7	−2·0	38·4	+2·1	40·7	+2·9	49·2	+7·0	44·0	?	47·7	+5·0
6	25·3	−2·5	38·6	−2·4	37·7	+0·2	34·9	−1·5	39·3	+0·9	44·6	+2·5	39·0	?	43·1	+0·5
7	35·8	+7·2	40·1	−1·3	42·7	+5·2	37·9	+1·1	41·7	+2·7	42·0	+0·4	41·5	?	41·0	−1·3
8	25·8	−2·6	40·1	−1·3	41·2	+3·5	30·9	−5·9	42·1	+2·8	44·1	+2·4	47·0	?	40·0	−2·6
9	39·8	+11·1	42·1	+0·1	43·7	+5·9	34·9	−2·0	41·3	+2·5	39·4	−2·8	45·5	?	38·4	−4·7
10	36·8	+7·7	46·1	+3·6	35·2	−2·4	40·0	+2·9	43·8	+5·3	51·3	+8·6	44·0	?	48·7	+5·3
11	27·8	−1·4	41·1	−1·7	30·7	−5·9	31·4	−6·0	39·3	+1·6	46·1	+2·6	37·5	?	55·4	+11·4
12	34·3	+5·4	51·0	+8·4	31·2	−4·7	42·0	+4·7	37·2	+0·4	48·2	+4·1	36·5	?	47·2	+2·9
13	29·3	+0·2	40·6	−2·2	28·2	−7·4	33·9	−3·6	28·8	−7·4	48·2	+4·1	30·5	?	54·4	+10·0
14	23·8	−5·5	37·6	−5·1	28·7	−6·6	32·9	−4·6	31·6	−4·3	47·1	+3·0	31·5	?	47·2	+2·4
15	24·8	−4·5	41·6	−1·3	28·7	−6·3	30·6	−6·7	34·8	−0·6	44·1	+0·4	35·5	?	45·1	+0·5
16	26·3	−3·6	39·1	−4·2	24·7	−10·5	33·9	−3·8	32·4	−3·3	51·8	+8·4	35·5	?	48·7	+4·0
17	18·8	−11·8	39·6	−4·6	25·2	−10·2	31·9	−6·4	33·6	−2·4	46·1	+2·7	35·5	?	46·2	+1·2
18	15·3	−15·2	40·6	−3·7	27·7	−7·7	28·9	−9·6	36·4	+0·4	44·6	+0·9	32·5	?	45·1	−0·2
19	14·8	−16·1	30·5	−13·9	25·7	−9·8	26·4	−12·2	35·0	−1·1	44·1	+0·6	37·0	?	44·6	−0·3
20	15·8	−15·5	37·1	−7·6	37·7	+2·1	32·9	−6·4	37·0	+0·8	39·9	−4·0	40·0	?	38·9	−6·3
21	39·3	+8·1	38·1	−6·6	45·3	+10·1	35·9	−3·3	46·5	+10·9	39·4	−4·9	42·0	?	45·1	−0·2
22	34·8	+3·1	49·0	+4·4	32·7	−2·4	48·0	+8·9	46·5	+10·8	44·1	−0·3	47·5	?	42·0	−2·9
23	31·8	0	46·1	+1·0	34·3	−0·8	45·5	+5·8	36·0	−0·4	52·3	+7·4	35·5	?	58·8	+13·7
24	31·8	+1·1	46·1	+1·1	31·7	−3·2	37·9	−2·4	31·6	−4·8	46·1	+0·6	32·5	?	50·7	+5·0
25	34·8	+5·1	41·6	−2·3	33·7	−0·7	38·9	−1·4	34·6	−1·6	46·1	+0·6	33·5	?	48·2	+2·4
26	33·8	+4·9	55·0	+11·9	36·7	+2·8	42·0	+2·1	38·5	+2·6	49·8	+4·5	38·0	?	50·3	+4·7
27	37·3	+9·5	57·9	+15·1	36·7	+3·1	44·5	+4·8	35·2	0	44·1	−0·7	38·0	?	45·1	−0·3
28	39·8	+12·5	55·0	+12·7	32·2	−0·9	49·0	+10·1	42·1	+7·7	53·3	+9·1	41·0	?	48·2	+3·4
29	30·8	+3·1	47·1	+4·9	31·2	−1·7	49·0	+10·7	35·6	+1·7	55·7	+11·9	37·5	?	55·9	+11·7
30	29·3	+1·4	41·1	−1·5	28·2	−4·7	45·0	+7·2	28·6	−4·9	53·8	+10·3	32·0	?	53·9	+10·2
31	26·3	−2·3	42·1	−1·4	26·7	−6·5	44·0	+6·0	24·0	−9·7	43·6	+0·4	28·0	?	43·1	−0·3
Mean.	29·4	+0·2	42·7	−0·1	34·5	−1·0	31·3	−0·6	37·9	+1·5	46·1	+2·6	38·6	?	46·2	+2·0

Table II.—Continued.

Date.	Ranikhet.		Bareilly.		Darjeeling.		Dhubri.		Abu.		Deesa.		Pachmarhi.		Hoshangabs.	
	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.
1	46·0	+6·5	41·3	−2·7	33·8	−1·1	53·5	+0·1	51·0	−0·5	51·9	+1·0	39·3	−7·2	47 3	−4·4
2	50·0	+10·7	41·3	−2·9	35·2	+0·8	53·0	0	54·9	+3·7	51·9	+1·0	38·3	−8·1	42·8	−8·9
3	50·0	+10·5	39·8	−4·6	35·9	+1·3	53·0	+0·1	59·9	+9·0	50 9	−0·1	40·8	−5·3	44·8	−7·1
4	56·0	+16·6	46·8	+2·1	37·9	+3·3	52·5	−0 9	55·9	+4·8	51·4	+0· 1	43·3	−2·6	48·3	−3·7
5	47·0	+7·1	46·8	+2·2	35·7	+1·1	54·9	+1·3	52·9	+1·5	52·4	+0·9	47·3	+0·9	48·8	−3·6
6	45·0	+4·6	47·3	+2·8	35·3	−0·1	54·9	+1·2	53·9	−2·4	50·4	−1·2	46·3	−0·3	50·3	−1·8
7	44·0	+3·1	45·3	+1·0	35·1	−0·5	53·9	+0·5	56·9	+5·4	55·4	+4 2	53·2	+6·6	57·8	+5·9
8	49·0	+8·0	40 3	−4·2	36·7	+0·5	53·5	+0·2	59·9	+8·7	60·8	+10·0	61·2	+14·3	53·3	+1·4
9	47·0	+5·8	40 8	−3·9	35·7	−0·7	53·5	+0·7	58·9	+8·0	58·9	+8·3	49·2	+1·5	54·8	+2·9
10	49·0	+8·0	45·8	+0·6	34·3	−2·3	53·5	+0·6	59·9	+9·4	59·9	+9·2	50·2	+2·0	56·3	+4·1
11	41·0	+0·5	50·3	+4·4	35·4	−1·0	54·4	+1·5	56·9	+6·8	56·9	+6·5	50·7	+2·0	54·3	+1·4
12	40·0	+0·3	48·3	+1·8	36·7	+0·7	53 0	−0·3	51·0	+1·1	57·4	+6·7	51·7	+3·1	57·3	+4·1
13	36·0	−3·6	52·3	+5·6	Not recorded		53·9	+0·6	51·0	+0·6	53·9	+2·3	55·2	+6·7	55·8	+2·6
14	34·0	−5·3	48·3	+1·5	37·3	+1·7	58·9	+5·4	49·5	−1·3	54·9	+2·8	49·7	+1·4	54·3	+0·9
15	40·0	+1·0	51·3	+4·5	35·1	−0·2	57·4	+4·2	48·0	−3·5	53·4	+0·9	49·2	+0·9	53·3	−0·1
16	40·0	+0·6	51·3	+4·5	35·2	−0·1	55·9	+2·5	50·5	−1·3	56·4	+3·3	52·2	+4·4	57·3	+4·2
17	38 0	−2·0	49·8	+3·2	Not recorded		54·9	+1·6	51·9	−0·4	53·4	+0·1	58·7	+10·6	61·3	+7·9
18	41·0	+1·0	50·3	+3·4	38·1	+3·3	54·9	+1·3	53·4	+1·2	56·9	+4·3	56·7	+8·3	57·8	+4·3
19	41·0	+1·2	50·3	+3·5	37·5	+3·0	55·4	+1·6	47·5	−4·5	50·9	−1·2	51·7	+3·8	55·3	+2·1
20	44·0	+4·4	41·3	−5·2	39·1	+4·8	56·9	+2·8	51·5	−0·5	55·9	+4·2	50·7	+3·2	60·3	+7·0
21	44·0	+4·9	44·8	−1·6	38 8	+4·7	53·9	−0·2	57·9	+5·9	53·9	+2 9	50·2	+2·4	55·8	+2·7
22	51 0	+12·2	42·8	−3·4	38 1	+4·9	54·9	+0·8	61·4	+9·4	56·4	+5·6	50·7	+3·5	55·3	+3·2
23	46·0	+6·9	53·8	+7·7	37·2	+3·9	53·0	−1·0	56·4	+4·1	61·8	+10·6	57·2	+10·3	56·8	+5·0
24	33·0	−6·3	53·3	+6·9	35·6	+2·4	56·9	+3·0	48·0	−4·1	58·4	+7·0	48·2	+0·4	55·3	+3·2
25	39·0	−0·1	42·3	−4·9	32·4	−1·2	54 9	+0·8	50·0	−1·1	49·5	−1·0	46·8	−1·0	56·8	+4·9
26	43·0	+4·2	49·3	+2·2	35·7	+2·3	53·0	−1·2	54·4	+4·3	53·9	+3·8	55·2	+8·2	57·8	+6·4
27	43·0	+4·8	47·3	+0·2	35·9	+2·0	53·9	−0·3	58·9	+9·6	59·9	+10·4	61·2	+14·3	59 3	+8·1
28	46·0	+8·3	50·3	+3·5	36·1	+2 7	55·9	+1·9	58·4	+9·7	63·3	+14·1	53·2	+6·7	58·8	+7·7
29	40·0	+2·4	56·8	+10·4	38·2	+4·7	55·4	+1·7	53·4	+4·9	60·4	+11·1	60·7	+15·0	60·8	+10·1
30	37·0	−0·9	58·8	+12 8	39·2	+6·3	60·4	+7·2	46·0	−2·8	57·9	+8·1	62·2	+16·8	62·3	+11·7
31	32·0	−6·2	50·3	+4·6	33·7	+1·4	55·4	+2·5	44·1	−5·6	57·9	+7·5	54·2	+8·6	59·3	+8·1
Mean.	43·0	+3·5	47·7	+ 1 8	36·2	+1·8	54·8	+1·3	53·7	+2·8	55·7	+4·6	51·4	+4·2	55·2	+ 2 7

Table III. giving the difference day by day of the maximum temperature at 8 selected pairs of stations (viz., each pair consisting of a hill station and adjacent plain station) named in the headings.

1889.	Quetta & Jacobabad.	Murree & Rawalpindi.	Simla & Ludhiana.	Mussoorree & Roorkee.	Ranikhet & Bareilly.	Darjeeling & Dhubri.	Mt. Abu & Dessa.	Pachmarhi & Hoshangabad.	General character of weather.
Jan. 1	23·8	10·9	13·7	14·8	11·5	29·7	18·1	9·8	Barometer rising, clear.
2	12·9	12·0	13·0	16·8	11·0	30·2	15·6	9·3	Do. „ light cloud, Punjab.
3	13·9	11·4	13·5	10·8	5·1	27·7	16·1	7·9	Do. falling, cloud plains and hills.
4	20·3	10·0	10·8	8·8	6·1	24·3	16·6	8·3	Do. „ clouds, Punjab and Hills.
5	26·3	19·9	15·9	11·8	9·1	23·3	19·6	8·3	Do. rising, rapidly, skies cloudy.
6	21·3	16·4	23·1	18·8	12·5	27·2	19·1	10·3	Do. „ Sky clear.
7	18·8	13·4	21·6	23·8	18·4	31·7	19·1	8·3	Do. „ do. do.
8	21·3	11·9	13·0	17·3	12·0	30·2	17·7	8·8	Do. falling, no clouds.
9	18·4	13·4	14·0	11·8	10·5	27·7	21·2	9·8	Do. „ light cloud.
10	13·8	9·4	15 5	12·8	13·0	30·7	20·2	10·3	Do. „ do. „
11	28·3	27·8	20·7	18·3	17·0	26·3	20·1	10·9	Do. „ Moderate cloud.
12	30·9	20·4	21·4	24·8	19·5	29·7	19·6	9·8	Do. „ Skies clouded, especially hills.
13	28·4	19·4	16·0	13·3	20·9	?	18·5	9·8	Do. rising, Snow on hills
14	29·9	17·4	27·2	18·8	20·9	25·8	20·0	8·8	Do. „ Clear over plains, overcast hills.
15	30 9	21·9	28·9	24·3	20·9	26·8	19·5	7·4	Do. „
16	25·9	18·4	25·9	15·8	21·9	29·3	18·0	7·3	Do. „ Snow on hills.
17	36·5	23·1	26·9	21·8	18·7	?	15·5	8·9	Do. „ Generally clear.
18	39·5	18·4	23·1	26·3	19·4	31·3	16·5	9·9	Do. falling.
19	36·5	18·5	21·1	24·3	24·9	27·3	14·0	11·3	Do. rising.
20	16·3	16·4	15·7	23·3	19·9	28·8	13·0	10·8	Do. falling, clear.
21	15·3	5·0	14·7	22·3	10·1	23·8	16·1	6 3	Do. „
22	20·8	10·4	11 4	14·8	7·1	31·2	18·7	9·9	Do. „ Snow storm Murree & Quetta.
23	28·9	23·5	15·9	23·8	12·1	31·7	17 6	11·4	Do. „ Snow storm hill stations.
24	30 9	24·9	18·5	18·8	3·8	30·3	20·0	9·9	Do. rising rapidly, snow on hills, rain on plains.
25	21·8	19·9	23·1	22·8	13·3	30·2	19·0	8·8	Do. „
26	23·3	15·4	20·7	21·8	16·9	27 8	19·1	8 8	Do. „ Moderate cloud, Upper India.
27	33·4	16·4	21·9	16·3	18·9	28·8	19·1	12·8	Do. falling, Moderate cloud.
28	26·9	13·4	17·0	22·3	15·5	34·7	17·1	8·4	Do. „ rapidly, rain N. Punjab.
29	27 9	15·6	11·6	12·8	17·0	32·2	17·2	7·9	Do. „ very rapidly, overcast N. India.
30	25·9	16·1	20·1	19·3	11·0	28·8	21·5	8·9	Do. „ Snow on hills, rain in plains.
31	35·0	21·6	21·7	24·3	12·9	23·6	21·0	10·3	Do. rising very rapidly, snow on hills.
Mean ...	25.3	16·5	18·6	18·6	14·6	28·7	18·2	9·3	
Nor. mean	21·7	15·5	11·4	17·3	16·1	29·1	15·1	9·5	
Diff. from Normal ...	+3·6	+1·0	+7·2	+1·3	−1·5	−0·4	+3·1	−0·2	

The following table (Table IV) gives the differences day by day of the night or minimum temperature at the pairs of stations named in the headings, a negative sign indicating that the night temperature was higher at the hill than at the corresponding plain station.

Table IV.

1889.	Quetta & Jacobabad.	Murree & Rawal Pindi.	Simla & Ludhiana.	Mussoorree & Roorkee.	Ranikhet & Bareilly.	Darjeeling & Dhubri.	Mt. Abu & Deesa.	Pachmarhi & Hoshangabad.
Jan. 1	11·8	−6·8	0·7	−3·1	−4·7	19·7	0·9	8·0
2	8·8	−8·4	−4·1	−2·6	−8·7	17·8	−3·0	4·5
3	8·3	−12·4	−2·8	−5·7	−10 2	17·1	−9·0	4·0
4	4·8	−5·4	−4·6	−3·4	−9·2	14·6	−4·5	5·0
5	17·8	3·7	8·5	3·7	−0·2	19·2	−0·5	1·5
6	13·3	−2·8	5·3	4·1	2·3	19·6	−3·5	4·0
7	4·3	−4·8	0·3	−0·5	1·3	18·8	−1·5	4·6
8	14·3	−10·3	2·0	−7·0	−8·7	16·8	0·9	−7·9
9	2·3	−8·8	−1·9	−7·1	−6·2	17·8	0	5·6
10	9·3	4·8	7·5	4 7	−3·2	19·2	0	6·1
11	13·3	0·7	6·8	17·9	9·3	19·0	0	3·6
12	16 7	10·8	11·0	10·7	8·3	16·3	6·4	5·6
13	11·3	5·7	19·4	23 9	16·3	?	2·9	0·6
14	13·8	4·2	15·5	15·7	14 3	21·6	5·4	4·6
15	16·8	1·9	9·3	9·6	11·3	22·3	5·4	4 1
16	12·8	9·2	19·4	13·2	11·3	20·7	5·9	5·1
17	20·8	6·7	12·5	10·7	11·8	?	1·5	2·6
18	25·3	1·2	8·2	12·6	9·3	16·8	3·5	1·1
19	15·7	0·7	9·1	7·6	9·3	17·9	3·4	3·6
20	21·3	−4·8	2·9	−1·1	−2·7	17·8	4·4	9·6
21	−1·2	−9·4	−7·1	3·1	0 8	15·1	−4·0	5·6
22	14·2	15·3	−2·4	−5·5	−8·2	16·8	−5·0	4·6
23	14·3	11·2	16·3	23·3	7·8	15·8	5·4	−0·4
24	14·3	6·2	14·5	18·2	20·3	21·3	10·4	7·1
25	6·8	5·2	11·5	14·7	3·3	22·5	−0·5	10·0
26	21·2	5 3	11·3	12·3	6·3	17·3	−0·5	2·6
27	20·6	7 8	8·9	7·1	4·3	18·0	1·0	−1·9
28	15·2	16·8	11·2	7·2	4·3	19·8	4·9	5·6
29	16·3	17·8	20·1	18·4	16·8	17·2	7·0	0·1
30	11·8	16·8	25·2	21·9	21·8	21·2	11·9	0·1
31	15·8	17·3	19 6	15·1	18·3	21·7	13·8	5·1
Mean ...	13·3	3·1	8·2	7·7	4·7	18·6	2·0	3·7
Normal mean	13·6	2·4	7·1	8·5	6·4	18·9	0·2	5·3
Diff. from normal	−0·3	+0·7	+1·1	−0·8	−1·7	−0·3	+1·8	−1·6

An examination of the preceding data shews that there were three periods in Jannary 1889 during which the minimum temperature of the hill stations was in excess of that at the neighbouring plain stations. These were—

1*st*. From the 1st to the 4th.

2*nd*. From the 8th to the 11th.

3*rd*. From the 20th to the 22nd.

The abnormal temperature relations were most marked during the

first period, and we shall therefore use chiefly the data of that period in the discussion.

During the first period extending from the 1st to the 4th the minimum temperature was on every night several degrees higher at the hill stations than at the adjacent plain stations. The minimum temperature on the night of the 3rd for example was $12\frac{1}{2}°$ higher at Murree than at Rawalpindi, 3° higher at Simla than at Ludhiana, 5° higher at Mussooree than at Roorkee, and 10° higher at Ranikhet than at Bareilly.

The following method of stating the facts will shew that the inversion of the temperature relations was not confined to the neighbourhood of the hills only. On the night of the 3rd (or early morning of the 4th) the minimum temperature at Murree, Simla, Ranikhet, and Mussooree was higher than at all the plain stations in the Punjab, North-Western Provinces (except Jhansi), Rajputana, Sind, Central India, and the greater part of Behar and Bengal and the Central Provinces.

The following statement gives exact data for representative stations in each province.

Hill stations.	Minimum temperature 3rd January.	Province.	Plain stations.	Minimum temperature 3rd January.	Difference between minim. temp. of Murree and plain stations.	Difference between minim. temp. of Simla and plain stations.	Difference between minim temp. of Ranikhet and plain stations.
Murree ...	49·3	Punjab	Rawalpindi	36·9	−12·4	−11·5	−13·1
			Lahore	37·2	−12·1	−11·2	−12·8
Simla ...	48·4		Sirsa	39·1	−10·2	−9·3	−10·9
		Sind	Jacobabad	38·6	−10·7	−9·8	−11·4
		Rajutana	Jeypore	42·2	−7·1	−6·2	−7·8
			Indore	44·8	−4·5	−3·6	−5·2
		Central Provinces	Nagpur	50·2	+0·9	+1·8	+0·2
			Khandwa	44·0	−5·3	−4·4	−6·0
			Jubbulpore	38·9	−10·4	−9·5	−11·1
		Berar	Akola	43·2	−6·1	−5·2	−6·8
		Bombay	Malegaon	44·5	−4·8	−3·9	−5·5
			Poona	49·0	−0·3	+0·6	−1·0
Chakrata	53·6	N. W. Provinces	Agra	43·6	−5·7	−4·8	−6·4
			Lucknow	41·0	−8·3	−7·4	−9·0
Ranikhet	50·0		Allahabad	42·7	−6·6	−5·7	−7·3
		Behar	Patna	46·9	−2·4	−1·5	−3·1
			Durbhunga	50·4	+1·1	+2·0	+0·4
		Bengal	Hazaribagh	49·3	0	+0·9	−0·7
			Calcutta	48·8	−0·5	+0·4	−1·2
			Burdwan	48·3	−1·0	0·1	−1·7
			Jessore	46·9	−2·4	−1·5	−3·1
			Burrisal	49·1	−0·2	+0·7	−0·9
			Dacca	54·2	+4·9	+5·8	+4·2
			Saugor Island	51·2	+1·9	+2·8	+1·2
		Assam	Dhubri	53·2	+3·9	+4·8	+3·2

The minus sign in the preceding table indicates that the plain station to which it refers had a lower minimum temperature than the hill station with which it is compared and the plus sign that it had a higher temperature.

The preceding table shews over what an extensive area in Northern and Central India it is possible for the minimum temperature to be considerably (from 1° to 12°) below that of the hill stations in Upper India.

Table I. shews that the inversion of temperature obtained on at least eleven nights during the month. The following examples from previous years, which examination shews to be fairly average cases, will indicate to what extent the temperature variations of January 1889 were abnormal. In January 1888 the night temperature of Mussooree ranged from 5·6° above that of Roorkee to 21·8° below it (giving a total range of 27·4). The average difference of temperature was 8·1° for the month, which is almost identical with the normal average (8·5°). The minimum temperature at Mussooree was in excess of that of Roorkee on only three nights of the month. In January 1886 the night or minimum temperature at Simla ranged from 2·8° above that at Ludhiana to 23·5° below (giving a total range of 26·3°) and was above that at Ludhiana on three nights only during the month. The difference between the minimum temperatures at these two stations averaged 10°. It is not necessary to multiply cases, as all that have been examined give similar evidence. Hence it appears that in ordinary seasons the minimum temperature may be on two or three nights in January in slight excess at the hill stations of Upper India as compared with the adjacent plain stations of the Punjab and North-Western Provinces. These figures hence establish that, although inversion of the normal vertical temperature relations is not infrequent in the month of January in Upper India, it was of abnormal frequency in January 1889. It was undoubtedly related to or connected with the holding off of the winter rains in that month. Anticyclonic conditions prevailed in Upper India with unusual persistency, and it was not until the end of the month that general rain accompanying a depression and cold weather storm occurred in the plains and heavy general snow in the hills. Hence the high temperature was undoubtedly associated with anticyclonic conditions of pressure, as has been found to be the case in Europe and the United States during similar vertical temperature relations, and also with the protracted delay in the depression of the snow line in the hills during winter produced by general snowfall.

The preceding paragraphs have stated fully one important feature of the anomalons temperature conditions of the month of January 1889. Before proceeding to discuss the causes of these features, it is desirable to trace the varying temperature relations between the plains and the hills in Upper India more exactly. There are three prominent types of

weather conditions and relations in the hills and plains of Upper India during the cold weather. These are as follows :—

1*st.*—The prevalence of fine clear weather with light winds or calms in the hills and plains. These conditions accompany prolonged anticyclonic pressure conditions of moderate intensity in Upper India, and may be described as "ordinary anticyclonic conditions." They obtain frequently during the cold weather.

2*nd.*—The prevalence of disturbed or stormy weather in the hills and plain districts. This type of weather is due to the formation, passage, or existence of cold weather depressions. Skies are heavily clouded, rain falls more or less generally in the plains of Upper India, and heavy general snow is received in the higher mountain regions down to a level determined chiefly by the intensity of the storm. Winds are weak in the plains, but their directions usually indicate feebly marked cyclonic circulation about an ill-defined centre. The winds are on the other hand often strong or violent and the weather very stormy in the hill districts for periods varying in length from a few hours to several days. These periods may be described as those of "cold weather cyclonic storms."

3*rd.*—The prevalence of unusually bright clear cool weather such as always obtains over the whole of Northern India, after the breaking up of a large and well marked cold weather storm. In this case, a strong and steady cool westerly current flows from Upper India and the adjacent hills over the whole of Northern India as far east as the Bengal coast. The air is remarkably dry and bracing. The change of conditions is most marked in Bengal, where the weather during the previous unsettled period is usually damp, cloudy, and warm, with light southerly winds.

These are the three chief types of weather in Northern India during the cold weather period extending from November to February or March. They merge into each other, more especially (3) and (1). Again it frequently happens that small depressions pass over Upper India which give a brief period of cloudy weather without rain in the plains, and light local rain or snow showers in the hills. The precipitation in this case is almost entirely confined to the higher elevations. This type of weather gives rise to somewhat different temperature relations than (2). They will, however, be included in (2) as it is hardly possible to differentiate between all the numerous varieties of cold weather storms.

The temperature conditions and relations in ordinary anticyclonic weather in Upper India will be sufficiently shewn by the following data given in three small tables for the two pairs of stations, Murree and

Rawalpindi and Simla and Ludhiana. The first table gives the daily range of temperature at three pairs of stations on six days of January 1889, when anticyclonic conditions accompanying inversion of vertical temperature relations obtained in Upper India.

Day of month.	Murree.	Rawal-pindi.	Simla.	Ludhiana.	Ranikhet.	Bareilly.
3rd	9·8°	33·6°	13·3°	29·6°	16·1°	31·4°
4th	13·8°	29·2°	20·8°	36·2°	15·1°	30·4°
8th	13·5°	35·7°	17·6°	28·6°	14·2°	34·9°
9th	14·9°	37·1°	16·9°	32·8°	15·2°	31·9°
21st	18·8°	33·2°	13·0°	34·8°	20·1°	29·4°
22nd	?	?	15·8°	29·6°	15·1°	30·4°
Mean daily range of selected periods ...	14·2°	33·8°	16·1°	31·9°	16·0°	31·4°
Normal daily range of selected periods ...	13·1°	27·0°	15·3°	25·0°	14·9°	24·9°
Difference ...	+1·1°	+6·8°	+0·8°	+6·9°	+1·1°	+6·5°

This table shews a considerable amount of irregularity at the hill stations in the daily range of temperature during these periods of inversion of night temperature. On the other hand the daily range of temperatnre at the level of the plains is always excessive and approximately uniform as shewn by the Rawalpindi and Ludhiana data.

The following table gives the variations of the maximum and minimum temperature on the same days at the hill stations from their normal values at the same stations, a plus sign indicating that temperature was in excess and a minus sign that it was below the normal.

Day of month.	Murree.		Simla.		Ranikhet.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
3rd	+ 9·7°	+12·6°	+ 9·5°	+11·6°	+10·7°	+10·5°
4th	+ 9·6°	+ 8·4°	+14·4°	+ 9·0°	+15·7°	+16·6°
8th	+ 3·8°	+ 3·5°	+ 5·2°	+ 2·8°	+ 7·2°	+ 8·0°
9th	+ 7·8°	+ 5·5°	+ 4·5°	+ 2·5°	+ 6·1°	+ 5·8°
21st	+16·8°	+10·1°	+ 8·5°	+10·9°	+11.2°	+ 4·9°
22nd	?	?	+11·6°	+10·8°	+13·7°	+12·2°
Mean variation from normal during periods ...	+9·5°	+8·1°	+9·0°	+7·9°	+10·8°	+9·7°

This table shews conclusively that during these periods of inverted temperature relations temperature was excessive at the hill stations and the excess was nearly as marked in the night as in the day temperature.

The following gives similar data for the neighbouring plain stations:—

Day of month.	Rawalpindi.		Ludhiana.		Bareilly.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
3rd	+6·4°	+0·8°	+7·0°	+3·6°	+0 7°	−4·6°
4th	+4·3°	+3·1°	+9·6°	−0·6°	+1·7°	+2·1°
8th	+2·3°	−5·9°	+5·6°	+2·4°	+5·2°	−4·2°
9th	+7·8°	−2·0°	+5·2°	−2·8°	+2·7°	−3·9°
21st	+5·9°	−3·3°	+6·4°	−4·9°	+4·7°	−1·6°
22nd	...	...	+5·6°	−0·3°	+3·6°	−3·4°
Average ...	+5·3°	−1·5°	+6·6°	−0·4°	+3·1°	−2·6°
Range of variation ...	6·8°		7·0°		5·7°	

These figures are very consistent and establish that in these periods under discussion the day temperature was considerably above the average at the plain stations and the night temperature was generally below it but by smaller amounts. They also shew that what may be termed the range of variation from the normal diminished from west to east in the plain of Northern India.

Hence it may be inferred that the temperature conditions of periods of ordinary anticyclonic weather in Upper India are:—

(*a.*)—Increased day and night temperatures at the hill stations, the excess being nearly as great in the night as it is in the day temperatures, so that practically the daily range is unaltered.

(*b.*)—Increased day and decreased night temperature and hence a much greater daily range of temperature at the plain stations.

(*c.*)—When these conditions are most pronounced, in consequence of the opposite variations of the night temperatures at the hill and plain stations, the minimum temperature is occasionally during such periods several degrees higher at the hill stations than in the adjacent plains. The data for January 1889 also shew that the low temperature in the plains, more especially when compared with the hill stations, is not a phenomenon of valleys or of the low lying districts in the immediate neighbourhood of the hills, but may extend over the whole of Northern and Central India, and therefore to a distance of some hundreds of miles from the mountains of Northern India.

The same tables (I to IV) also give three examples of very low temperature of the hill stations during stormy weather. These are:—

1*st*, the night of the 13th.

2*nd*, the night of the 23rd.

3*rd*, the nights of the 30th and 31st.

The last is the most striking example and is therefore best adapted to illustrate the temperature relations between the hills and plains during cold weather storms.

The following gives a brief description of the character of these disturbances taken from the India monthly weather report for January 1889.

"The barometer began to fall briskly on the afternoon of the 8th in Upper Sind and Beluchistan, and a very shallow depression was formed on the 9th, which followed the same course as the previous disturbance and gave moderately heavy snow to the Punjab Himalayas on the 10th, and brought the snow line down to below 9,000 feet. The weather continued somewhat disturbed in Northern India for three days longer, and light showers fell at the hill stations on the 12th, and in Behar, Chutia Nagpore, and Central Bengal on the 13th. Pressure increased steadily until the 17th, when very strongly marked anti-cyclonic conditions, with fine, clear, cool weather and strong westerly or north-westerly winds, prevailed over the whole of Northern India. The highest pressures of the month were recorded on the morning of the 17th, the absolute maximum being 30·38″ at Peshawar. No change of importance occurred untill the 22nd, when the barometer fell briskly in North-Western India. The disturbance then initiated differed considerably in character from the previous. There were two separate areas of disturbance in which the barometer fell rapidly, and more or less general rain was received. The first included the Punjab Himalayas and adjacent plains from Sealkot to Roorkee, and the second comprised the greater part of Rajputana and Indore. The disturbance in the Punjab passed away after giving moderate snow in the hills on the afternoon of the 23rd and light showers in the adjacent plains. That which originated in Rajputana drifted during the next two days eastward into East Bengal and Burma, and gave moderate general rain to the North-Western Provinces, Central India, and light local showers in Behar, Bengal, and Assam. A short interval of fine weather followed until the afternoon of the 27th, when the first large and important cold weather storm of the year was initiated. It was, like the previous, a double disturbance. It consisted in part of a shallow depression which passed into Sind from Beluchistan on the 28th and advanced during the next three days in an east-south-east direction across the head of the Peninsula into Upper Burma, to which it gave cloudy weather on the 1st February. It apparently filled up very slowly in that area and gave low pressure in Burma until the 5th. The appearance of this depression in Sind on the

28th was followed on that day by a very rapid fall of the barometer in the North Punjab and the formation of an independent deep depression, the centre of which was to the north of Rawalpindi and Peshawar on the morning of the 29th. It intensified considerably during the day and marched slowly to the south-east along the hills, to which it gave very stormy weather and heavy snowfall during the next forty-eight hours. A very rapid rise of the barometer set in on the 31st, and the depression filled up very rapidly. This deep depression very largely modified the distribution of pressure over the whole of North-Western and Central India, and obscured the shallow depression in Central India on the 29th and 30th; but with the disappearance of the former on the 31st, the latter again became clearly marked and formed the chief feature of the weather during the next two days. The double disturbance gave a large general and much needed supply of rain to the greater part of Northern India, including the Punjab, Rajputana, Central India, the North-Western Provinces and Behar, and showers in Bengal."

The following gives the precipitation at the hill stations during the storm:—

	January 1889.					February 1889.		Total fall during period.
	27	28	29	30	31	1	2	
Murree ...	—	0·71	2·49	2·45	0·75	1·05	—	6·75
Simla ...	0·07	—	0·78	1·93	1·65	0·30	—	4·73
Chakrata...	—	—	0·75	2·98	1·44	0·28	—	5·45
Ranikhet...	—	—	0·90	2·52	1 92	0·25	—	5·59

At the three first named stations rain and sleet fell during the earlier part of the disturbance, but it changed afterwards to snow, which fell steadily during the night of the 30th and the greater part of the 31st and 1st, when the weather cleared up rapidly. At Ranikhet little or no snow fell. The depth of snow at the end of the storm at Simla was quite three feet, at Chakrata about the same, and at Murree about five feet. The nights of the 30th and 31st were hence stormy with strong winds, thick cloud, and constant snowfall. The cloud canopy extended over the greater part of Northern India, or over the East Punjab, N.-W. Provinces, Behar, and East Rajputana.

The following gives the minimum temperature on these nights at Simla and at a large number of stations in the plains.

Date.	Hill station.	Minimum temperature. A.	Plain station.	Province.	Minimum temperature. B.	Difference between hills and plains. B—A
Night of 30th Jan. 1889.	Simla	28·6°	Ludhiana	Punjab	53·8°	25·2°
			Lahore		49·0°	20·4°
			Lucknow	N.-W. P.	58·9°	30·3°
			Allahabad		59·2°	30·6°
			Patna	Bengal	59·8°	31·2°
			Calcutta		62·3°	33·7°
			Jeypore	Rajputana	54·1°	25·5°
			Nagpur	Central Provinces	62·3°	33·7°
			Deesa	Bombay	57·9°	29·3°
			Jacobabad	Sind	41·1°	12·5°
Do. of 31st Jan. 1889.	Simla	24·0°	Lahore	Punjab	42·1°	18·1°
			Lucknow	N.-W. P.	56·9°	32·9°
			Allahabad		59·7°	35·7°
			Patna	Bengal	59·8°	35·8°
			Calcutta		61·8°	37·8°
			Jeypore	Rajputana	41·2°	17·2°
			Nagpur	Central Provinces	59·3°	35·3°
			Deesa	Bombay	57·9°	33·9°
			Jacobabad	Sind	42·1°	18·1°

These figures indicate that over the whole of the plains of Northern India the minimum night temperature was from 20° to 30° higher than at the hill stations of Upper India. These very large differences (in the opposite directions to those discussed in the previous case) were mainly due to the abnormally low temperature in the hills, and in part to the increased night temperature in the plains due to the presence of clouds diminishing radiation. The characteristic features of these periods will be best shewn by examining the whole of the temperature data of the same stations as in the previous case.

The following gives the daily range of temperature on six days of the month during these stormy-weather periods.

Date.	Murree.	Rawalpindi.	Simla.	Ludhiana.	Ranikhet.	Bareilly.
11th	12·0°	28·5°	9·2°	23·1°	17·2°	24·9°
13th	14·0°	27·7°	21·9°	18 5°	19·3°	23·9°
23rd	3·3°	15·6°	14·3°	13·9°	18·1°	22·4°
24th	10·5°	29·2°	10·6°	14·6°	24·3°	7·8°
30th	8·4°	7·7°	14·5°	9·4°	21·2°	10·4°
31st	5·9°	10·2°	15·5°	17·6°	25·3°	19·9°
Average daily range during selected periods ...	9·0°	19·5°	14·3°	16·2°	20·9°	18·2°
Normal daily range of month...	12·3°	25·4°	14·8°	24·1°	14·5°	24·2°

The figures show that at such periods the daily range is slightly diminished at the hill stations, but is very greatly reduced at the plain stations.

The following table gives the variations from the normal of the maximum and minimum temperatures on the same dates at the hill stations, a plus sign indicating excess and a minus sign defect.

	Simla.		Murree.		Chakrata.	
Date.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
11th	−3·3°	+1·6°	−6·2°	−5·9°	−2·8°	+0·8°
13th	−0·3°	−7·4°	−6·2°	−7·4°	+3·6°	+1·8°
23rd	−0·3°	−0·4°	−8·7°	−0·8°	+16·8°	+2·4°
24th	−8·4°	−4·8°	−3·5°	−3·2°	+4·2°	−0·9°
30th	−6·0°	−4·9°	−8·4°	−4·7°	+2·2°	−3·2°
31st	−9·3°	−9·7°	−13·1°	−6·5°	−10·7°	−5·0°
Mean.	−4·6°	−4·3°	−7·7°	−4·8°	+2·2°	−0·7°

This table shows that during these periods the night and day temperatures at the hill stations were considerably reduced below the normal and by nearly equal amounts.

The Chakrata observations at this period, it should be noted, were apparently vitiated by large occasional errors, but in examining their figures it should be taken into consideration that the only stormy weather which influenced Chakrata was that of the 30th and 31st.

The following table gives similar data for the adjacent plain stations.

	Ludhiana.		Rawalpindi.		Roorkee.	
Date.	Maximum.	Minimum.	Maximum	Minimum.	Maximum.	Minimum.
11th	+2·1°	+2·6°	+6·6°	+6·0°	+0·7°	+11·4°
13th	−0·4°	+4·1°	−2·1°	−3·6°	+2·1°	+10·0°
23rd	−1·6°	+7·4°	−1·1°	+5·8°	+6·7°	+13·7°
24th	−7·0°	+0·6°	+5·2°	−2·4°	−4·4°	+ 5·0°
30th	−4·2°	+10·3°	−9·4°	+7·2°	−7 5°	+10·2°
31st	−6·3°	+0·4°	−8·2°	+6·0°	−11·1°	− 0·3°
Mean.	−2·9°	+4·2°	−1·5°	+3·3°	−2·3°	+8·3°

These data shew that at the plain stations the range of temperature was diminished not only by decreased day temperature but also by increased night temperature to an equal or greater amount. Hence during these storms the temperature was reduced at the hill stations throughout, whereas at the plain stations it was raised at night by amounts nearly equal to the decrease in the daytime, and there was practically no alteration in the daily range at the hill stations, whereas it was largely reduced at the plain stations.

It hence follows that the temperature relations which obtain during stormy weather accompanied with snow in the hills and rain showers in the plains are:—

1*st.* Diminished temperature throughout the whole day at the hill stations and hence the maximum and minimum temperatures are reduced below the normal by nearly equal amounts and the daily range of temperature is only slightly affected.

2*nd.* At the plain stations temperature is below the normal to a moderate extent in the day, and is considerably above it at night, and hence the daily range of temperature is very considerably reduced.

3*rd.* In consequence of the decreased night temperature at the hill stations and increased night temperature at the plain stations, the differences of the minimum temperature at hill stations and adjacent plain stations are then exaggerated and are occasionally 10° to 15° greater than the average differences.

The third type of temperature relations which obtain in the cold

weather in Northern India are those which hold during the fine clear weather and strongly marked anticyclonic conditions that follow a severe cold weather storm. There is no marked example in the temperature data of January 1889. The conditions are shewn in the weather which followed the snow storms of the 30th, 31st January, and 1st February in the hills of Upper India.

The account of the storm has been given in a preceding paragraph. The snowfall which it gave was far heavier in the Punjab Himalayas than in the N.-W. Provinces and Nepal hills. At Simla an average depth of 3 feet lay on the ground at the end of the storm. The weather cleared up in the Punjab on the 1st, and fine clear weather prevailed for some days. The skies cleared in the N.-W. Provinces on the 2nd and 3rd, and in Bengal on the 4th and 5th.

The two following tables give the maximum temperatures and their variations from the normal at eight typical stations in Northern India during the period from the 30th January to 5th February.

Station.	Maximum temperature.						
	Jany. 30th.	Jany. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	32·6°	34·1°	40·7°	43·7°	47·7°	53·7°	45·7°
Simla ...	39·5°	28·8°	35·8°	36·5°	41·3°	51·2°	51·5°
Lahore ...	58·5°	60·5°	60·0°	58·0°	62·5°	65·5°	67·0°
Roorkee ...	58·3°	65·8°	62·8°	59·8°	62·8°	64·8°	68·3°
Lucknow ...	73·1°	70·1°	69·1°	67·1°	67·1°	68·6°	71·6°
Patna ...	65·2°	68·2°	67·7°	67·7°	70·2°	69·2°	68·2°
Burdwan ...	81·5°	84·0°	76·5°	76·0°	78·0°	74·5°	74·5°
Calcutta ...	82·5°	83·5°	76·0°	72·5°	75·5°	73·5°	74·5°

Station.	Variation from normal of maximum temperature of						
	Jany. 30th.	Jany. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	−13·1°	−11·4°	−4·7°	−1·2°	+3·1°	+8·7°	+0·1°
Simla ...	−9·3°	−20·8°	−13·1°	−12·4°	−8·2°	+0·7°	+0·1°
Lahore ...	−9·7°	−7·8°	−8·2°	−10·2°	−5·5°	−2·5°	−1·1°
Roorkee ...	−11·1°	−3·9°	−7·0°	−10·4°	−7·9°	−6·4°	−3·2°
Lucknow ...	−0·8°	−3·8°	−5·3°	−7·8°	−8·6°	−7·5°	−4·8°
Patna ...	−8·4°	−5·6°	−6·3°	−6·5°	−4·5°	−5·9°	−7·4°
Burdwan ...	+2·3°	+4·8°	−2·7°	−3·7°	−2·2°	−6·4°	−6·9°
Calcutta ...	+4·9°	+5·9°	−1·6°	−5·5°	−3·8°	−5·7°	−5·2°

These observations show that on the 30th and 31st, when stormy weather prevailed in Upper India, but had not extended to Behar and

Bengal, the maximum temperature was considerably below the normal in Upper India (the deficiency being most marked at the hill stations), and was much above the average in Bengal, Behar, and the greater part of the North-Western Provinces. In the hill districts the maximum temperature was lowest on the last day of the storm and rapidly increased during the next few days, so that at Simla on the 5th, when the snow was nearly all melted except in sheltered spots, the maximum was slightly above the average. The most important fact is that the lowest day temperatures in the plains were not recorded during the passage of the cloudy weather of the storm, but on the first two days of cloudless skies and fine dry weather which followed the storm. The greatest depression of day temperature occurred at Lahore and Roorkee on the 2nd, at Lucknow on the 3rd, at Burdwan and Calcutta on the 4th and 5th. This transmission of the cold wave corresponds to the rate of transmission of the storm itself, which roughly averaged from 250 to 300 miles per diem, or 10 to 12 miles an hour.

The two following tables give similar data for minimum temperature. (The data are of the night preceding 8 A. M. of the day named.)

Station.	Minimum temperature of night preceding 8 A. M. of						
	Jany. 30th.	Jany. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	26·7°	23·7°	25·7°	25·7°	34·7°	36 7°	34·7°
Simla. ...	24·0°	21·0°	26·2°	26·0°	31·4°	38·5°	38·5°
Lahore ...	42·1°	39·6°	42·1°	37·2°	36·2°	38·7°	41·6°
Roorkee ...	43·1°	41·1°	44·1°	41·5°	42·0°	43·1°	50·3°
Lucknow ...	56·9°	48·0°	47·0°	50·5°	46·0°	42·0°	44·0°
Patna ...	59·8°	52·9°	47 9°	49·9°	48·9°	43·8°	48·9°
Burdwan ...	62·4°	61·4°	53·3°	51·3°	43·2°	43·2°	51·3°
Calcutta ...	61·8°	61·3°	52·3°	52 3°	58·8°	53·3°	49·8°

Station.	Variation of minimum temperature of date from the normal.						
	Jany. 30th.	Jany. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	−6·5°	−9·0°	−6·8°	−6·4°	+2·6°	+4·1°	+1·6°
Simla ...	−9·7	−13·1°	−8·2°	−8·8°	−3·8°	+2·9°	+3·1°
Lahore ...	−0·2	−3·2°	−1·0°	−5·5°	−6·4°	−4·0°	−0·8°
Roorkee ...	−0·3°	−2·9°	−0·7°	−3·7°	−3·6°	−2·6°	+4·7°
Lucknow ...	+10·8°	+1·8°	+0·4°	−3·5°	−1 2°	−5·4°	−3·6°
Patna ...	+10 3°	+3·9°	−1·1°	+0·5°	−0·8°	−5·9°	−1·0°
Burdwan ...	+7·7°	+6·8°	−1·1°	−3·4°	−11·7°	−12·0°	−4·1°
Calcutta ...	+6·2°	+5·8°	−3·2°	−3·6°	+2·3°	−3·7	−7·6°

These figures shew that the minimum temperature was greatly below the normal at the hill stations during the storm and largely above it in the plains on the 30th and in Bengal on the 30th and 31st, the excess being greatest in the North-Western Provinces. The night temperature slowly and steadily rose at the hill station frem the 31st to the 5th, when it was above the normal. It was lowest in the Punjab on the 2nd and 3rd, in the N.-W. Provinces on the 3rd and 4th, and in Behar on the 4th and 5th, and in Bengal on the 5th. These facts are most easily summarized by the statement that a wave of cold was transmitted eastwards across Northern India at the rate of about 300 to 400 miles per diem.

The humidity data of the same stations for the same period are even more interesting and instructive. The first of the two following tables gives the humidity at 8 A. M. and the second the aqueous vapour pressure at the stations named. The third table gives the amount of cloud at the same hour and illustrates the rapid and complete clearing of the skies which follows the cold weather storms of Northern India.

Station.	Humidity at 8 A. M.						
	Jany. 30th.	Jany. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	98	100	99	83	84	26	35
Simla ...	28	31	13	47	42	58	27
Lahore ...	93	90	94	94	92	78	68
Roorkee ...	94	79	86	90	94	90	90
Lucknow ...	85	95	78	62	81	63	100
Patna ...	91	99	90	85	83	51	89
Burdwan ...	83	84	82	62	73	59	67
Calcutta ...	87	89	94	69	69	55	72

Station.	Vapour tension at 8 A. M.						
	Jany. 30th.	Jany. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	·162	·159	·146	·139	·149	·069	·099
Simla ...	·049	·043	·017	·087	·067	·148	·072
Lahore ...	·335	·281	·276	·276	·245	·197	·219
Roorkee ...	·391	·261	·242	·281	·265	·259	·270
Lucknow ...	·486	·488	·316	·257	·322	·228	·300
Patna ...	·275	·525	·463	·308	·354	·237	·378
Burdwan ...	·505	·524	·480	·289	·354	·302	·299
Calcutta ...	·552	·642	·549	·357	·342	·309	·343

Station.	Cloud proportion at 8 A. M.						
	Jany. 30th.	Jany. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	10	10	10	4	0	10	8
Simla ...	10	1	2	9	0	0	0
Lahore ...	10	0	0	10	0	0	0
Roorkee ...	10	0	3	2	0	0	0
Lucknow ...	7	8	0	0	3	0	0
Patna ...	10	10	0	0	9	0	0
Burdwan ...	5	8	0	0	0	0	0
Calcutta ...	0	0	0	0	0	7	0

The second table shews that the amount of aqueous vapour pressure in the air was greatest in the Punjab on the 30th and in the Gangetic plain on the 31st. A large decrease occurred on the 1st in the Punjab, on the 2nd in the Gangetic plain, and the decrease continued until the end of the period in Bengal. The lowest aqueous vapour pressure was registered in the North-Western Provinces on the 4th and in Bengal on the 5th, and the amount of vapour was only from one-half to one-third of that present in the air on the 31st. This very great change accompanied the extension of west and north-west winds across the Gangetic Valley into Bengal.

Two more remarkable illustrations might be given from the meteorology of recent years of the remarkable weather changes which occur in the rear of cold weather storms in Northern India and follow their disappearance (*viz.*, the periods February 1st to 6th, 1886 and February 5th to 12th, 1887). The last week of January or first week of February is, in at least two years out of three, one of stormy weather in the hill districts, and some of the most severe snow-storms of recent years have occurred during that fortnight. The second of these two periods, *viz.*, February 5th to 12th, 1887 is selected in further illustration of the peculiar features of the fine weather immediately succeeding severe stormy weather in Northern India and the Himalayan region.

The disturbance which gave this stormy weather first appeared as a depression in the South-west Punjab on the 27th of January. It intensified on the 28th and moved eastwards. It passed into the Himalayan region of the North-Western Provinces on the 29th and 30th. Heavy snow fell in the North-West Himalayas and Afghan highlands at this time, and extended eastwards to the Eastern or Assam Himalayas. Stormy and cloudy weather with much snow continued over the whole Upper Himalayan region until the 7th, when the weather suddenly cleared

up, and fine bright clear and cool weather prevailed for some days over the whole of Northern India.

The following tables give data of the temperature, humidity, and other meteorological conditions of the period.

Maximum temperature.

Station.	February 1887.						
	7th.	8th.	9th.	10th.	11th.	12th.	13th.
Murree ...	37·6°	43·3°	40·8°	44·9°	41·0°	42·7°	40·5°
Rawalpindi ...	60·1°	69·2°	61·3°	63·5°	60·1°	64·1°	64·1°
Lahore ...	66·5°	67·0°	66·5°	68·5°	69·5°	68·0°	71·1°
Agra ...	73·9°	71·1°	70·1°	70·1°	72·4°	77·2°	79 7°
Allahabad ...	79·8°	73·8°	70·3°	68·8°	70·9°	74·0°	78 7°
Patna ...	77·8°	75·8°	71·7°	69·2°	70·6°	72·3°	76·3°
Calcutta ...	82·1°	82·5°	78·0°	72·5°	72·5°	72·8°	76·5°
Dacca ...	82·1°	82·7°	81·1°	77·6°	77·0°	74·4°	75·9°

Minimum temperature.

Station.	February 1887.						
	7th.	8th.	9th.	10th.	11th.	12th.	13th.
Murree ...	25·5°	27·1°	28·6°	30·7°	29·3°	32·4°	29·7°
Rawalpindi ...	29·4°	32·9°	28·7°	33·4°	45·0°	42·0°	39·4°
Lahore ...	32·2°	31·7°	31·2°	34·2°	41·5°	46·0°	40·6°
Agra ...	46·6°	38·7°	36·7°	31·7°	41·6°	48·6°	49·2°
Allahabad ...	44·7°	41·6°	39·1°	39·6°	39·6°	41·7°	52·5°
Patna ...	50·9°	47·9°	44 7°	45·4°	43 8°	46·9°	53·4°
Calcutta ...	68·7°	59·3°	57·3°	52 8°	47·7°	47·7°	51·8°
Dacca ...	59·5°	55·2°	53·3°	49·1°	46·6°	45·5°	50·0°

Diurnal range of Temperature.

Station.	February 1887.						
	7th.	8th.	9th.	10th.	11th.	12th.	13th.
Murree ...	12·1°	15·2°	12·2°	14·2°	11·7°	10·3°	10·8°
Rawalpindi ...	30·7°	36·3°	32·6°	30·1°	12·1°	22·1°	24·7°
Lahore ...	34·3°	35·3°	35·3°	34·3°	28·0°	22·0°	30·5°
Agra ...	27·0°	32·4°	32·3°	29·8°	30·8°	28·6°	30·5°
Allahabad ...	33·1°	31·8°	31·2°	29·2°	31·3°	32·3°	26·2°
Patna ...	26·9°	27·9°	29·8°	23·8°	26·8°	25·4°	22·9°
Calcutta ...	13·4°	23·2°	20·7°	24·8°	24·8°	25·1°	24·7°
Dacca ...	22·6°	27·5°	29·8°	28·5°	30·4°	28·9°	25·9°

Humidity at 10 hours.

Station.	February 1887.						
	7th.	8th.	9th.	10th.	11th.	12th.	13th.
Murree ...	82	55	50	61	79	80	57
Rawalpindi ...	37	30	44	61	48	55	47
Lahore ...	33	33	24	28	28	41	34
Agra ...	33	32	28	29	25	36	39
Allahabad ...	44	38	27	31	32	24	35
Patna ...	45	54	41	38	42	43	47
Calcutta ...	85	33	32	26	34	36	53
Dacca ...	90	33	28	22	46	42	53

Aqueous vapour pressure at 10 hours.

Station.	February 1887.						
	7th.	8th.	9th.	10th.	11th.	12th.	13th.
Murree ...	·168	·109	·126	·154	·169	·196	·148
Rawalpindi ...	·146	·116	·163	·173	·226	·211	·230
Lahore ...	·140	·135	·105	·146	·169	·235	·209
Agra ...	·183	·155	·142	·150	·145	·237	·259
Allahabad ...	·238	·158	·136	·174	·189	·174	·252
Patna ...	·308	·296	·225	·214	·238	·277	·332
Calcutta ...	·680	·261	·208	·168	·208	·237	·377
Dacca ...	·648	·289	·217	·134	·292	·295	·396

Station.	Amount of wind during 24 hours ending 4 P. M. February, 1887.						
	7th.	8th.	9th.	10th.	11th.	12th.	13th.
Murree ...	167	117	170	117	267	206	200
Rawalpindi ...	115	155	79	56	68	58	117
Lahore ...	50	66	75	56	42	35	95
Agra ...	92	36	85	121	59	65	77
Allahabad ...	85	43	114	108	47	97	144
Patna ...	43	62	88	98	50	66	76
Calcutta ...	94	85	126	125	80	125	77
Dacca ...	34	63	99	126	62	67	40

The following gives a brief summary of the chief conclusions from the data of this period:—

1*st*.—The lowest day temperatures were recorded at Murree and the hill stations just before the storm disappeared and at the

plain stations during the fine clear weather which followed the storm. The lowest maximum temperatures were observed in the Punjab on the 9th and in East Bengal on the 12th. This may be summed up by assuming the eastward passage of a cold wave along the plains of Northern India.

2nd.—The lowest night temperatures of the period were registered in the hills on the 6th and 7th during the storm, and in the plains during the fine clear weather which followed in the rear of the storm. Thus the lowest minimum temperatures occurred in the Punjab on the 9th, in the North-Western Provinces on the 9th and 10th, in Behar on the 10th and 11th and in Bengal on the 11th and 12th. This further proves the passage of a wave of cold eastwards along the length of the plains of Northern India, at a rate of about 300 miles per diem.

3rd.—The period immediately following the breaking up of the storm was one of large diurnal range of temperature. The effect of the dry weather which followed in increasing the daily range was shewn most strikingly in Bengal. The daily range at Calcutta increased from 13·4° on the 7th to 25·1° on the 12th and at Dacca from 22·6° on the 7th to 30·4° on the 11th.

4th.—There was a large temporary increase in the air motion, which was first shewn at the western stations and extended eastwards. It occurred at the Bengal stations two or three days later than in the Punjab and Western districts of the North-Western Provinces. These winds were the cool westerly winds which followed in the rear of the storm and accompanied the setting in of fine clear dry weather.

5th.—The most important change was in the amount of vapour and the humidity of the atmosphere. This was far more marked in Bengal than in the Gangetic area. In Bengal local damp sea winds prevailed during the existence of the cold weather storm, and after it disappeared they were replaced by dry land westerly winds. The humidity at Calcutta decreased from 85 to 33 and at Dacca from 90 to 33 in 24 hours. The aqueous vapour pressure data shew that this was due to a large reduction in the amount of vapour pressure and hence to the displacement of the previous winds by an air current of opposite characteristics. The amount of vapour in the air at Calcutta on the 10th was less than a fourth of that present in it on the 7th.

The following hence gives the chief features of the anti-cyclonic weather immediately following a cold weather storm during which heavy general snow has fallen in the Afghan highlands and the Himalayas :—

(*a.*)—Pressure is excessive in Upper India and unusually clear bright fine weather prevails. Strong westerly winds set in over Upper India and extend rapidly eastwards. In Bengal these winds displace the light southerly or easterly winds which prevailed during the previous disturbed weather.

(*b.*)—During the stormy weather both day and night temperatures are very low at the hill stations, but, with the melting of the snow, temperature rapidly increases and the ordinary anti-cyclonic conditions of increased temperature are again exhibited at these stations. The important factor in determining this change of temperature conditions appears to be the melting of the snow from all the lower elevations.

(*c.*)—During the disturbed weather the day temperature in Upper India is below the normal and the night temperature is above it. In Bengal and Behar, in consequence of the prevalence of light southerly and easterly winds, both day and night temperatures are considerably above the normal and the weather sultry and oppressive. The disappearance of the disturbance is usually followed by a rapid reduction of both the day and night temperatures. This accompanies a complete shift of wind from some southerly to some northerly direction and the prevalence of unusually clear bright skies in which the solar radiation is even greater than usual. This passage of a wave of cold is hence evidently due to the intrusion of a body of cold air advancing from Upper India or the Himalayan mountain region into the Gangetic plain and Bengal.

(*d.*)—The setting in of these winds produces a very rapid reduction in the humidity of the air and the amount of vapour. The reduction is far greater in Bengal than in the interior, and is sometimes excessive.

(*e.*)—In consequence of these large changes of humidity and temperature, the periods immediately following cold weather storms in Upper India are especially cool, pleasant, and bracing in Bengal and stand in marked contrast to the weather prevailing before and during the existence of the storms.

We proceed to give an explanation of these facts.

The chief feature of the cold weather in Upper India is great stillness of the air, the stillness being most marked at night.

The following table gives the amount of winds measured by the

self registering anemographs during the month of January 1889, and illustrates this feature of the air motion.

The following table gives the amount of wind during the day and night hours

Date.	Roorkee.		Lucknow.	
	Amount of wind in miles.		Amount of wind in miles.	
	6 A.M.—6 P.M.	6 P.M.—6 A.M.	6 A.M.—6 P.M.	6 P.M.—6 A.M.
1st January 1889.	32	3	60	24
2nd	1	0	31	24
3rd	33	0	15	12
4th	20	0	13	11
5th	2	2	12	6
6th	12	2	43	39
7th	30	10	49	28
8th	14	6	53	24
9th	14	7	30	2
10th	55	13	4	2
11th	20	0	5	1
12th	1	17	17	16
13th	44	0	41	5
14th	2	0	3	6
15th	0	2	13	9
16th	2	2	45	17
17th	5	4	33	13
18th	4	10	41	42
19th	39	18	100	47
20th	29	3	103	48
21st	4	0	26	17
22nd	18	21	40	11
23rd	29	0	14	15
24th	13	4	6	2
25th	19	0	23	6
26th	6	2	4	0
27th	6	4	4	3
28th	1	34	10	8
29th	57	153	102	100
30th	63	25	155	25
31st	26	1	57	11
Average of period from 1st to 27th.	17 miles.	4·5 miles.	31 miles.	16 miles.

These figures shew very clearly the quiescent state of the atmosphere in Northern India during the cold weather and more especially at night. This is especially observable in the periods of ordinary anti-cyclonic conditions.

In fine clear weather the range of temperature is large. It averages 27° for the whole of the Punjab for the month, and in fine clear weather usually varies little from 36°F. or 20°C. The range at the hill stations is much less, averaging 15° and rarely exceeding 18°, even in

clear weather. It is not necessary to give data for these statements, as a reference to the Tables I to IV will confirm them. We shall therefore assume these two figures, *viz.*, 18° and 36°, as representing approximately the daily ranges of temperature of the air at the hill stations and adjacent plains in Upper India in ordinary fine clear anti-cyclonic weather in January. If there were absolutety no motion of the air, vertical or horizontal, an increase of temperature of 36° of the lowest strata of air over the plains would cause pressure, as measured by the barometer, to increase about two inches. No such increase actually occurs. The only large barometric movement in such weather is the diurnal oscillation (slightly exceeding in amount a tenth of an inch), which goes on with great regularity. Again, as no such large increase of pressure occurs, it is evident that it is counterbalanced by the subsequent changes of pressure due to air motion of expansion, convection currents and horizontal movement. The cooling of the air takes place most rapidly for some hours after sunset when the air movement is apparently least. The adjustment of pressure to the changing temperature conditions during night is frequently not accompanied by any perceptible or measurable air movement (*vide* data of Table, p. 41). The slightest observation of the way in which the smoke of the evening fires in an Indian town in Upper India lies over it motionless indicates clearly that the only important air movement which occurs in the evening during the rapid cooling of the air, can only be one of compression due to descent of the air above the lowest stratum, and that this is so extremely slow a process as to be imperceptible even by its action on mist and smoke. Considering the first 1000 feet thickness of the atmosphere to be homogeneous, the upper surface would have to descend about 60 feet in order to produce the compression required to maintain pressure at the same amount. This motion may appear to be considerable, but if it occurs as an accompaniment to the cooling it will take several hours to be completed. A total downward movement of the air at a height of 1000 feet through sixty or seventy feet spread over several hours is exceedingly small and cannot be detected by any of the ordinary methods of measuring air motion. The assumption of this slow motion of compression is hence in accordance with facts and competent to explain them. The cooling by night hence takes place in a nearly quiescent atmosphere, and if there be any convection currents, they are so feeble, more especially when compared with those which accompany heating during the day, as to be of no importance and negligible. Hence the motion of the air at night in Upper India during fine clear weather in January may be assumed to be a very small general downward movement producing the

amount of compression necessary to counterbalance almost exactly the effect of diminishing temperature on the pressure. In the open Gangetic plain, more especially near the hills, it may be accompanied by slight horizontal movements, but they are generally too small to be measured by an anemometer. Hence the adjustment of pressure takes place in the cold weather during the day time chiefly by convection currents and partly by expansional movement of the lower strata and partly by horizontal motion from west to east or from the area of later to earlier solar action during the day; and during the night, almost solely by vertical movement accompanying or producing compression.

Through such a nearly motionless atmosphere the heat radiated from the earth's surface will pass readily. The chief proportion of the small absorption which occurs will be in the lowest strata. Hence the upper strata which receive little heat and give out little by radiation will have their temperature very slightly affected by this cause. Also if the compression of the lower strata be effected by the expansion of the upper strata, these strata will be slightly cooled, whilst the compression of the lower strata will cause a slight increase of temperature, but these changes can be shown to be so small as not to affect the temperature at the utmost more than 1° or 2°. The most important action, however, occurs in the lowest strata. The earth is cooled rapidly by radiation from its surface into space, and in the vast level plains of Northern India, the air remains quiescent or stagnant over it and hence cools down rapidly. (The cooling of the lowest strata probably takes place chiefly by conduction and to some extent by convection currents extending to a comparatively small height, determined partly by height of vegetation, trees, houses, &c.) The chief fact, however, remains that the cooling occurs in a stagnant or quiescent stratum near the earth's surface, and hence goes on continuously during the night, and produces a very large accumulated decrease of temperature.

This action is, however, chiefly confined to the lowest strata and above these the fall of temperature will be almost solely due to conduction (a slow process in air) and hence be small in amount. Also, as the lower strata are compressed and the upper strata expand, there will be some level at which at each instant there is neither compression nor expansion. Whether this will alter much in position during the night can only be conjectured, but it appears on the whole most probable that it will not. The total fall of temperature during the night will hence decrease rapidly in amount with elevation and at some elevation become practically constant where it will be due almost entirely to slight cooling by radiation and by expansion and to a very slight extent by conduction and probably not exceed 2° or 3° in amount.

In the preceding discussion it has been shewn that the temperature conditions and changes at the hill stations are usually different from those of the plain stations. For example, ordinary anti-cyclonic weather gives increased day and night temperature at the hill stations, and hence increases the mean temperature and only affects the diurnal range very slightly, whilst in the plains it gives increased day and decreased night temperature, and hence increases very largely the diurnal range of temperature, whilst it only slightly affects the mean daily temperature. Again stormy weather in the mountain districts of Northern India gives decreased day and night temperature and hence a much lower mean temperature than usual with little change in the diurnal range of temperature. The same weather in the plains gives decreased day and increased night temperature, and hence the diurnal range of temperature is largely diminished, whilst the mean temperature is very slightly affected. Hence the important conclusions,

1*st.*—That the chief weather changes and conditions in Northern India during the cold weather affect the temperature in entirely different ways in the plains and hills. In the former they modify the diurnal range of temperature chiefly and in the latter the daily mean temperature.

2*nd.*—That the monthly means of temperature or of daily range of temperature are in consequence not comparable for the hills and plain stations, and that similar variations from the normal imply different conditions and actions in the two cases.

3*rd.*—Hence the nature and causes of these changes and variations of the vertical temperature relations cannot be properly estimated and investigated by comparing monthly means, but by comparison of the actual temperature conditions prevailing in each particular state or type of weather.

Hence typical cases have been selected in the previous portion of the paper and the same principle is adopted throughout.

We are now in a position to give a simple explanation of the high night temperatures at the hill stations observed during fine clear weather in December and January.

In ordinary anti-cyclonic weather in January in the Punjab plains the temperature ranges from an average maximum of 72° to an average minimum of 36°, giving thus a mean diurnal range at such periods of 36°. The hill stations in Upper India are at an elevation of about 7000 feet above the sea or 6000 feet higher than the neighbouring plain stations. The rapid increase of temperature in the plains during the morning gives rise almost entirely to convection currents. As the air is very dry, it may be assumed that in rising and expanding it will cool

and diminish in temperature at a rate not much less than that of a rapidly ascending current of dry air, which is very approximately 1° for every 193 feet. Assuming the rate of decrease of temperature in these ascending currents to be 1° for every 200 feet, the motion of the atmosphere would tend to give a temperature of (72°—30° or) 42° at the elevation of 6000 feet above the plains of the Punjab. Little or no change would occur at night, when there are practically no convection currents, and hence at that elevation above the plains of Northern India the temperature in such periods would remain permanently at about 42° and hence be about 6° higher than the average night or minimum temperature at the level of the plains below.

The day temperature at the hill stations would be considerably higher than 42° in consequence of the heating of the air by contact with the land surface, and average about 60° in such weather. About sunset temperature would fall quickly and a short period of rapid decrease of temperature would occur until the temperature reached that of the same level above the plains, *viz.*, 42°. The continuous decrease of temperature in the hills and plains for some time after sunset would evidently give rise to a compressive movement over the hills and plains and also to a very slow downward movement of air from the hills towards the plains and to a nearly horizontal upper movement from above the plains towards the hills. Hence the air which cools by contact with the mountain sides and moves down towards the plains is replaced from a large source (that of the whole mass above the plains at the higher levels), and hence arrives at a nearly constant temperature corresponding to that level. Thus air brought in from the level of 7000 feet would arrive during the night at that level in the hills at a nearly constant temperature at 42°, and hence when the temperature at the hill stations has fallen to a little below 42° it would remain fairly steady during the night at about that temperature.* As the tempera-

* In order to verify this statement I had two series of temperature observations taken in a suitable open position on the top of a ridge at Simla on the nights of the 9th and 11th of December last, when ordinary anticyclonic weather prevailed in Northern India. They are given in the following table and it will be seen fully to confirm the conclusion given in the text.

Date.	Temperature of the air.												Min. temp. during night.
	16 hrs	16·30 hrs.	17 hrs.	17·30 hrs.	18 hrs.	18·30 hrs.	19 hrs.	19·30 hrs.	20 hrs.	20·30 hrs.	21 hrs.	21·30 hrs.	22 hrs.	
December 9th	54·9	52·4	49·2	47·7	45·4	46·6	46·9	46·6	46·7	44·9	43·2	45·6	45·9	41·0
„ 11th	50·7	48·5	43·9	43·8	42·0	42·2	42·7	43·1	42·6	43·3	43·6	44·9	45·2	41·2

ture at the level of the plains would probably fall to about 36° on such clear nights, the minimum temperature in the plains would hence be slightly below that at the hill stations 6000 feet above.

The previous supposition gives an average case, and shews that in ordinary anti-cyclonic weather in December and January the minimum temperature at the hill stations tends to be higher than at the plain stations.

The following are specific examples taken from the observations of the inversion of the vertical temperature relations was most marked:—

On the 2nd the maximum temperature at Rawalpindi was 70·5°. The corresponding temperature of convection at the level of Murree 4800 feet higher would be (70·5—24°) or 46·5°. The minimum temperature on the night of the 2nd was 49·3° or slightly greater. On the 3rd, the maximum at Rawalpindi was 68·9° and the convection temperature at the level of Murree 44·9°, which was practically identical with the actual minimum at Murree 44.6°. The minimum temperatures on these two nights at Rawalpindi were 37·4° and 36 9° or 11·9° and 7·7° lower than at Murree. Again at Ludhiana on the 3rd the maximum was 77·7 and at the level of Simla 6200 feet high the corresponding convective temperature would be (77·7°—31°) or 46·7°. The minimum at Simla on the night of the 3rd was 48·4° and 2·8° higher than at Ludhiana. At Roorkee on the same day the maximum was 72·3° and the corresponding convective temperature at the level of Musoorree (6000 feet higher) was 42·3°. The minimum at Mussooree was actually 42·0° and 5·7° higher than at Roorkee. It is not necessary to multiply examples, as these shew roughly that the minimum temperatures at the hill stations and therefore the temperature *during the greater part of the evening and night* is practically that of dry air at the level of the hill station rising rapidly with the maximum day temperature at the level of the plains or what may be termed the convective temperatures corresponding to the maximum temperature conditions of the lowest stratum.

Hence the explanation and facts appear to establish the following:—

(*a*)—In ordinary anti-cyclonic weather when the horizontal air motion by day or night is very small, the temperature at

With these figures may be compared the following temperature observations recorded at Lahore on the same days.

Date.	Temperature of the air at					Maximum temperature during day.	Minimum temperature during night.
	4 hrs.	8 hrs.	10 hrs.	16 hrs.	22 hrs.		
December 9th ...	40·5	47·5	66·0	76·2	50·0	74·2	38·9
„ 11th ...	41·0	46·0	66·0	72·5	48·6	75·2	39·4

considerable elevations above the plains is nearly constant, and is determined by the temperature at that elevation of the rapid upward convective currents at the hottest period of the day.

(*b*)—There is at such periods a slow steady descent of air during the night from the hills towards the plains and a horizontal inflow from higher levels of air at nearly constant temperature to the hills.

(*c*)—Temperature decreases very rapidly at the hill stations shortly before and for some little time after sunset until the temperature falls to or slightly below that of the same level in the open atmosphere over the plains of Northern India, after which it remains nearly constant throughout the night. The short chilly period immediately after sunset is a very characteristic feature of the hill stations in ordinary fine weather during November, December, and January.

(*d.*)—The temperature of the earth's surface in the plains of Northern India falls rapidly and steadily during the whole night and until very shortly before sunrise. Hence also the temperature of the quiescent mass of air immediately above it falls *pari passu*, and by amounts ranging from 30° to 40° in ordinary clear weather in January. The fall of temperature is greatest at a considerable distance from the foot of the hills, where the observations shew that the maximum temperatures are higher, the daily range of temperature greater, and the minimum frequently lower than immediately under the hills. The following gives examples for the 2nd and 3rd January, 1889. The stations which were to be compared are grouped by means of brackets.

Station.	2nd			3rd		
	Max.	Min.	Range.	Max.	Min.	Range.
Ludhiana	69·7	41·0	28·7	75·2	45·6	29·6
Lahore	72·0	36·2	35·8	73·0	37·2	35·8
Roorkee	70·8	38·9	31·9	70·8	36·6	34·2
Meerut	72·7	42·1	30·6	74·2	39·0	35·2
Delhi	73·1	41·1	32·0	78·1	40·1	38·0
Bareilly	73·7	41·3	32·4	71·2	39·8	31·4
Agra	75·6	44·6	31·0	78·6	43·6	35·0
Gorakhpur	68·9	45·4	23·5	71·8	47·9	23·9
Lucknow	75·2	43·0	32·2	71·1	41·1	30·0
Allahabad	71·4	43·7	27·7	77·0	42·7	34·3

As there is little or no difference, so far as can be judged, in the radiating power of the earth's surface at Ludhiana, Roorkee, Bareilly, and Gorakhpur as compared with Lahore, Delhi, Agra, and Allahabad in January to account for the greater cooling of the earth's surface and the superincumbent air, it is almost certain that the mass of air descending from the hills is warmed by the action of compression in descending, and that this is one, if not the chief, factor in giving a smaller fall of temperature and slightly increased night temperature at the stations nearest to the hills when compared with the more distant ones. Hence it is clear that the descending air does not contribute towards the cooling of the plains of Northern India during the night but actually tends to diminish it.

The efficient factors in the rapid cooling of the air in the plains of Northern India at such periods are :—

1*st*.—Absence of cloud and other conditions favouring rapid radiation from the earth's surface.

2*nd*.—Absence of air motion, and more especially of downward convection currents, so that the same mass of air remains in contact with the earth's surface.

The first ensures the rapid cooling of the earth's surface and the second of the air immediately above the earth's surface.

A brief explanation will serve for the temperature conditions in Upper India during and after stormy weather. The most important factor appears to be snow fall in the hills and rain in the plain districts. The condensation takes place largely, if not almost entirely, in the upper return current of the north-east monsoon circulation and hence at a great elevation. The falling rain and snow carry down with them the temperature of their place of origin and hence tend to cool considerably the whole mass of air through which they fall. The amount of the cooling will evidently depend greatly upon the amount and period of the rain and snowfall. In the hill districts, the temperature falls steadily throughout a long snow storm, and the lowest temperatures are usually recorded just before the weather begins to clear. In the plains, the day temperature falls in consequence of cloud and rainfall and the action of rainfall referred to above. But the cloud canopy causes terrestrial radiation to proceed very slowly at night. The effect of the cloud in diminishing radiation is so large that the night temperatures are hence at such periods considerably higher than usual. Hence stormy weather in January and February depresses temperature largely throughout the whole day at the hill stations, and in fact tends to give them a temperature nearly equal to the permanent temperatures of a stratum considerably above their level (*i. e.* of the stratum in which condensation occurs). Whereas in the plains the chief

effect is to diminish the daily range of temperature by decreasing the day and increasing the night temperature.

Finally, when the stormy weather passes away unusually dry clear weather sets in. In the hills the snow probably extends down to a level of 4,000 or 5,000 feet. The temperature of the air at and above that level is mainly determined by that of the snow surface with which it is in contact, and hence, even in the middle of the day, differs little from 32°. Hence a period of low and nearly constant temperature conditions sets in until the snow is melted and the snow line retreats. The snow melts very rapidly, at a rate of six to nine inches *per diem* in clear weather in exposed positions, and a snow fall of 3 or 4 feet will melt away and disappear in five or six days in favourable weather except in sheltered positions. Consequently, temperature in the hills at such periods is at first low, but rapidly rises with the melting of the snow, and after a few days of fine clear weather the conditions merge into those of normal ordinary anticyclonic weather, which have been already stated.

In the plains the conditions and actions are different. Solar radiation during such periods is more active than usual in consequence of the great clearness of the atmosphere, the absence of dust, &c. Hence not only is the upward convective motion over the plains during the day greater than usual, but in consequence of the low temperature over the snow-covered surface of the hills there is a rapid flow of air from the hills towards the plains, which in consequence of the first action is probably greater by day than by night. This mass of air starting from, say, a level of 4000 feet above the plains at a temperature of 32° will by rapid descent be heated about 20° and hence will arrive at the level of the plains at a temperature of about 32°+20°=52°, or 20° lower than the maximum temperature prevailing in the plains in ordinary anticyclonic weather. Hence there will be a steady flow of cool air towards the plains from the hills, the temperature of which, when it arrives at the level of the plains, will be very low when compared with the ordinary day temperature at the period. As the snow melts and the snow line ascends, the temperature of the descending current at the level of the plains will increase. Hence in the plains immediately after a severe storm in the hills there will be,

1*st.* A strong and steady current from the hills towards the plains and hence a strong easterly current from the north north-west and west down the Gangetic Plain.

2*nd.* This current will be fed from a source of nearly constant temperature above the elevation of the snowline, and hence the temperature of the descending current at the base of the hills will be least immediately after the clearing up

of the weather, and will increase slowly with the melting of the snow in the hills. Hence one of the most striking features is the low maximum temperatures recorded at such periods in Upper or Northern India, although the air is unusually clear, and the solar radiation at the earth's surface more intense than usual.

3rd. One of the chief features of a descending current is great dryness, hence the descending currents from the hills at such times will tend to give abnormally low humidity to the whole area over which their influence extends. The change of humidity due to this will evidently be greatest in the area over which damp sea winds previously prevailed, that is, usually in Bengal.

It will thus be seen that the features of the very cool and dry periods after stormy weather in Northern India during January and February are explicable on the assumption of unusually large and massive currents from the hills at a time when the snow surface has greatly extended downwards.

It is hardly necessary to point out that these cool periods are of occasional occurrence in Bengal, and are the most characteristic and pleasant feature of the cold weather. These cool periods in Northern India hence shew most strikingly the rapid and large influence which snowfall over a large mountain area exerts. Mr. Blanford and myself have shewn the probably large influence it occasionally exercises on the distribution of the south-west monsoon rainfall. This has been questioned by some writers as the effect appears to them to be disproportionate to the cause. The large changes in air motion, temperature, and humidity over the whole of Northern India which follow general snowfall in the hills, and which continue for longer or shorter periods according to the intensity and extent of the storm, are a frequent strong argument in its favour.

II.—*Natural History Notes from H. M.'s Indian Marine Survey Steamer* 'Investigator,' *Commander* ALFRED CARPENTER, R. N., D. S. O, *commanding.*—No. 14. *Observations on the Gestation of some Sharks and Rays.*—*By* ALFRED ALCOCK, M. B., *Surgeon-Naturalist to the Marine Survey.*

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(With Plate I.)

The observations which I have to record were, of necessity, made so hurriedly that I can only hope them to be regarded as a gleaning in the outskirts of the field of bionomic science. But any one who, single-handed, and almost without appliances, has been called upon, at a moment's notice, to undertake the examination of large dead animal bodies in the plains of tropical India will readily realize the difficulties which hinder the exact and exhaustive dissection, under similar conditions, of huge fishes, on board ship, in the Bay of Bengal. And I trust that the drawbacks alluded to will be taken into consideration with the unfinished appearance of the work.

§ 1. *Observations on the Gestation of* Carcharias melanopterus, Zygæna blochii, *and* Carcharias dussumieri.

a. CARCHARIAS MELANOPTERUS. A female, five feet long, was captured by Mr. W. H. W. Searle, of the 'Investigator,' on the Orissa coast, off the entrance to the Chilka Lake, on the 21st January, 1889. The abdomen was much distended; and, on opening it, the distal ends of the oviducts were found to form, on each side, an enormously dilated uterus, each occupying the whole length of the abdominal cavity on its own side.

On section, the walls of the uteri were found to be hyperæmic, rather hypertrophied, and spongy: their cavities were divided off, each into three separate longitudinal compartments: and tightly-packed in each compartment, lying head forwards, parallel with the antero-posterior axis of the mother, was a young one twelve inches long. Each young one was, further, completely enveloped in a very delicate membrane, on removal of which the placental-cord was found to be extended, in a semi-spiral curve, from a point midway between the pectoral fins of the fœtus to its maternal attachment at the hinder end of the uterus.

Each placental cord, which is about eighteen inches long, and one-sixth of an inch in diameter, is seen to divide, near the maternal attachment, into two equal branches, each of which subdivides again and again to form a compact arborescent mass, which is closely applied to a flat vascular disk on the wall of the uterus, and thus the placenta

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is formed. The maternal attachment of each placental cord is separate and distinct.

At the fœtal end, the cord, having pierced the ventral wall between the pectoral fins of the fœtus, divides into two branches. The lower of these, which is the artery, can be traced into the mesentery, where, at the level of the proximal end of the large intestine, it is found to be furnished with a pouch-like gland: its connexion with the dorsal aorta could not be made out. The upper branch (venous) subdivides into two branches, which ascend in the median fissure of the liver to the portal vein.

A transverse section of the placental cord shews one artery and one vein.

A transverse section through the wall of the uterus shows an outer, thin, compact layer of muscular and connective tissue; but the greater part of the section consists of an indefinite spongy network (venous ?), with numerous large thick-walled arteries.

The red blood cells of the fœtus are $\frac{1}{1430}$ of an inch long, and $\frac{1}{2350}$ of an inch broad.

b. ZYGAENA BLOCHII. On the same occasion, a female of this species, nearly five feet long, was taken. The general appearances were similar to the appearances in *Carcharias melanopterus;* but each uterus contained five fœtuses; and the placental cords, which were much more delicate, were uniformly covered, except at the extreme fœtal end, with flattened, leaf-like, bilobed or trilobed appendicula, from one-eighth to one-quarter of an inch long, each lobe being about one-eighth of an inch broad.

A transverse section of a placental cord, which includes vertical sections of the peripheral appendicula, shows, in the cord, a single artery, a large vein, and four large irregular channels; and, in each of the appendicula, a central longitudinal vessel apparently opening into one of the channels of the cord.

A single intact appendiculum, examined under a moderate power, is seen to have a thick external epithelial investment, while internally the central vessel is seen to break up into a fine ramifying and anastomosing capillary-like plexus.

A transverse section of an appendiculum, under a high power, resolves the epithelium-like investment into a gland-like aggregation of round large-nucleated cells, about ten strata deep, beneath which is the loose-meshed connective tissue of the appendiculum which supports the ramifying branches of the contained vessel.

The structure of the placenta, and the ultimate distribution of the vessels of the cord, are the same as in *Carcharias melanopterus*, but there

is no gland-like body in connexion with the artery. The red blood-cells of the fœtus are $\frac{1}{1300}$ of an inch in the major, and $\frac{1}{2860}$ of an inch in the transverse diameter.

The length of the fœtuses was about fifteen inches.

The nature of the appendicula is difficult to understand, seeing that the fœtus is connected with the mother by a large and well-developed placenta; but their richly cellular investment is evidence of some active function, either in the elaboration or purification of the blood proceeding to the fœtus. If the channels of the cord are regarded as lymphatics, the appendicula might be looked upon as forming a diffused and primitive lymphatic gland-system, their thick investment of lymphoid cells being analogous to the medulla of a mammalian lymphatic gland.

c. CARCHARIAS DUSSUMIERI. A female, seven feet and a half long, was hooked at sea, off the west coast of Middle Andaman Island, on the 13th of April, 1889.

Immediately after death, lively movements commenced in the abdomen, which was much distended; and the abdominal cavity, on being opened, was found almost completely filled by the dilated, congested, spongy-walled uteri, as in the case of *Carcharias melanopterus* and *Zygœna blochii*. Each uterus contained five living fœtuses, each two feet long, lying head forwards in separate compartments, each with its own placenta, exactly in the manner already described. The placental cords had the usual appearance.

The young ones when removed to a tub of sea-water swam about vigorously for nearly an hour, but died eventually from hemorrhage, due to rupture of the placental cord.

The structure of the placenta, and the distribution of the vessels of the cord, were exactly similar to those of *C. melanopterus*; but no gland-like organ was found on the artery.

Unfortunately, the selected specimens, though placed in strong alcohol, putrified.

The specimens of *Carcharias melanopterus* and *Zygœna blochii*, though packed in salt, became so rotten that they fell to pieces.

§ 2. *Observations on the Gestation of* Trygon bleekeri, *and on the Uterus of* Myliobatis nieuhofii.

a. TRYGON BLEEKERI. A female, with a disk of very large dimensions, was taken in the seine, by Mr. W. H. W. Searle, in False Point Harbour (Orissa coast), on the 15th December, 1888.

The distal end of the right oviduct was enormously dilated, and contained in its cavity a fully-developed male fœtus with a disk $11\frac{3}{4}$ inches long and $10\frac{3}{4}$ inches broad.

The striking feature was, that there was no connexion of any kind between the fœtus and the mother, and no evidence of any such previous connexion.

The mucous membrane of the uterus, however, was covered with an abundant glairy albuminous fluid, the secretion apparently of a layer of thick-set papillæ which formed its inner coat; and the inference seems irresistible that this fluid constituted the nutriment of the fœtus, and was, in short, a true uterine milk. Unfortunately, the examination of the stomach of the fœtus was delayed for twenty-four hours, when the viscera had undergone such changes that the verification of this theory was hardly possible.

On removal of the fluid, which was then found to form a nearly solid coagulum on the application of heat, the papillary layer of the mucous membrane of the uterus was found to be of a vivid scarlet.

The papillæ themselves average about half an inch in length, and are filiform in shape, and very delicate. They are so thick-set as to be in contact when not floated out in water.

Beneath them is a thick mucous layer rich in blood-vessels, and outside this is (1) an inner circular and outer longitudinal layer of muscle, and (2) a connective-tissue coat; the whole aggregating in thickness one-eighth of an inch.

The thickness and compactness of the muscular coat is in striking contrast with the loose spongy nature of the uterine walls in *Carcharias* and *Zygæna*, and appears to indicate much greater parturient effort in *Trygon*.

b. Myliobatis nieuhofii. A female, with a disk seventeen inches long and twenty-eight broad, was taken in the seine, by Mr. W. H. W. Searle, off Cocanada, on the 31st March, 1889.

The left ovary was full of large ova, and the distal end of its oviduct formed a large globular swelling, with thick, firm, muscular walls, and a uniform internal lining of broad flattened papillæ nearly half an inch long.

On the posterior surface of this uterus, and closely adherent to it, was an indistinctly lobulated gland-like organ, which, on section, was found to consist of an aggregation of tubules with blood-vessels and characteristic glomeruli, and a small amount of intertubular stroma. The tubules were lined with large-nucleated, cubical, epithelium. Unfortunately, the other relations of this kidney were missed.

A section through the uterus shows, from without inwards, (1) a compact connective-tissue investment about one-eightieth of an inch thick, with numerous large blood-vessels; (2) a layer of unstriped muscular tissue in transverse bundles; (3) a layer of similar muscular

tissue in longitudinal bundles, the united thickness of the two layers being about one-nineteenth of an inch; (4) a mucous layer of varying thickness, containing numerous blood-vessels and lymphatic (?) spaces, and crowded with lymphoid cells.

This mucous layer forms the long papillæ above mentioned, and a uniform sheet of close-set tubular glands, which resemble, for the most part, the lieberkuhnian follicles of human anatomy, covers its entire surface, both papillary and inter-papillary. These glands, at any rate near their orifices, are lined with short columnar epithelial cells, and similar cells invest the surface of the mucous membrane between the orifices of the glands.

The individual papillæ, as already stated, are about half an inch long, and are flattened. In some cases they bifurcate or trifurcate. In breadth they vary from one forty-eighth to one twenty-fourth of an inch. They are formed by a central prolongation of the mucous coat richly provided with lymphoid cells, and containing at least one blood-vessel and numerous lymphatic (?) spaces; and are invested externally by the above-described layer of tubular glands. These glands are mostly simple at the bases of the papillæ, but peripherally they frequently become racemose, and in this case the acini are lined internally with a cubical epithelium.

As to the function of this vast surface of glandular tissue, we are able to form an opinion by referring to the case of *Trygon bleekeri*. There we found a uterus exactly similar in its naked eye anatomy to the one we are discussing; and in this uterus was a large fœtus entirely separate, as far as structural connexion goes, from the mother; while the uterine papillary surface was concealed by a copious secretion of a highly albuminous, and presumably nutritive, fluid. In the absence of any vascular connexion between the fœtus and the mother, we assumed that this fluid served for the nutrition of the fœtus.

In *Myliobatis nieuhofii*, in which the uterine papillæ are less attenuated, and more amenable to manipulation, we find the whole intra-uterine mucous membrane forming a superficial gland; and I think we are justified in assuming that this gland is practically a milk-gland, the secretion of which furnishes the developing fœtus with nutriment.

In the *Zoological Record* the only allusion to uterine villi that I can find is to a paper by Trois, in the "*Atti del Instituto Veneto*" Vol. II, p. 429, "On the uterine villi of *Myliobatis noctula* and *Centrina salviani*;" but I regret that I have not been able to obtain access to this.

Explanation of Plate I.

Fig. 1. A piece of the placental cord of *Zygœna blochii*, natural size.

Fig. 2. Transverse section through the same, showing artery and vein, lymphatic (?) spaces, and three appendicula in oblique section with parts of two more in vertical section. × 16.

Fig. 3. A portion of one of the appendicula of the same, showing the ramifying vessel. × 21.

Fig. 4. Transverse section through part of one of the appendicula of the same, near its base. × 110.

Fig. 5. Transverse section through uterine wall of *Myliobatis nieuhofii*, showing fibrous and muscular coats, and mucous membrane, with the bases of three papillæ. × 21.

Fig. 6. Obliquely transverse section through part of one of the uterine papillæ of the same, showing some of the simple follicles of the mucous membrane in oblique section, and one of the racemose follicles. × 110.

III.—*On Clebsch's Transformation of the Hydrokinetic Equations.*

By Asutosh Mukhopadhyay, M. A., F. R. A. S., F. R. S. E.

[Received February 27th;—Read March 6th, 1889.]

A first integral of the hydrokinetic equations of Euler may be obtained by known methods in three cases: (1) Irrotational motion; (2) Steady rotational motion; (3) General rotational motion. It is the object of this note to show how the method of applying Clebsch's transformation to the third case can be materially simplified, and incidentally the relation between the three solutions is pointed out.*

Starting, then, with the hydrokinetic equations, we remark that they may be at once reduced to the forms

$$\frac{du}{dt} - 2v\zeta + 2w\eta + \frac{dR}{dx} = 0 \qquad \ldots\ldots\ldots\ldots \quad (1)$$

$$\frac{dv}{dt} - 2w\xi + 2u\zeta + \frac{dR}{dy} = 0 \qquad \ldots\ldots\ldots\ldots \quad (2)$$

$$\frac{dw}{dt} - 2u\eta + 2v\xi + \frac{dR}{dz} = 0 \qquad \ldots\ldots\ldots\ldots \quad (3)$$

where $$R = \int \frac{dp}{\rho} + V + \frac{1}{2} q^2$$

$$q^2 = u^2 + v^2 + w^2$$

* For the ordinary method, see Basset's Hydrodynamics, vol. i, p. 28.

In the first case, for irrotational motion, the components of molecular rotation ξ, η, ζ vanish, implying the equations

$$u = \frac{d\phi}{dx}, \quad v = \frac{d\phi}{dy}, \quad w = \frac{d\phi}{dz}$$

and the equations of motion reduce to

$$\frac{dU}{dx} = 0, \quad \frac{dU}{dy} = 0, \quad \frac{dU}{dz} = 0$$

where

$$U = \frac{d\phi}{dt} + R.$$

Hence, the required first integral is

$$\int \frac{dp}{\rho} + V + \frac{1}{2}q^2 + \frac{d\phi}{dt} = F,$$

where F is ordinarily a function of the time, but for steady motion an absolute constant throughout the liquid.

Secondly, if the motion is rotational but steady, we have

$$\frac{du}{dt} = 0, \quad \frac{dv}{dt} = 0, \quad \frac{dw}{dt} = 0$$

and the equations of motion lead to

$$u\frac{dR}{dx} + v\frac{dR}{dy} + w\frac{dR}{dz} = 0$$
$$\xi\frac{dR}{dx} + \eta\frac{dR}{dy} + \zeta\frac{dR}{dz} = 0.$$

These linear differential equations lead, by Laplaces's method, to the subsidiary systems

$$\frac{dx}{u} = \frac{dy}{v} = \frac{dz}{w}$$
$$\frac{dx}{\xi} = \frac{dy}{\eta} = \frac{dz}{\zeta}$$

which denote respectively stream lines and vortex lines. Hence, it is possible to construct a series of surfaces

$$R = \text{constant}$$

each of which shall be covered over with a net work of stream lines and vortex lines. Hence for steady rotational motion we have

$$\int \frac{dp}{\rho} + V + \frac{1}{2}q^2 = \text{constant},$$

the constant being an absolute constant so long as we pass from point to point on a stream line or vortex line, but which varies as we pass from one stream line to another or from one vortex line to another.

Thirdly, if the motion of the liquid is perfectly general, neither steady nor irrotational, we may put, after Clebsch,

$$udx + vdy + wdz = d\phi + \lambda\, d\chi.$$

Observe for a moment that as this simply signifies that the differential expression on the lefthand side, when not a perfect differential may be resolved into two, one of which is so, and the other may be made so by means of an integrating factor, the legitimacy of the transformation is selfevident. We have then

$$u = \frac{d\phi}{dx} + \lambda \frac{d\chi}{dx},\ v = \frac{d\phi}{dy} + \lambda \frac{d\chi}{dy},$$

$$w = \frac{d\phi}{dz} + \lambda \frac{d\chi}{dz},$$

furnishing the known expressions

$$2\,\xi = \frac{d\lambda}{dy}\frac{d\chi}{dz} - \frac{d\lambda}{dz}\frac{d\chi}{dy}$$

$$2\,\eta = \frac{d\lambda}{dz}\frac{d\chi}{dx} - \frac{d\lambda}{dx}\frac{d\chi}{dz}$$

$$2\,\zeta = \frac{d\lambda}{dx}\frac{d\chi}{dy} - \frac{d\lambda}{dy}\frac{d\chi}{dx}$$

These lead to the equations

$$\xi \frac{d\lambda}{dx} + \eta \frac{d\lambda}{dy} + \zeta \frac{d\lambda}{dz} = 0$$

$$\xi \frac{d\chi}{dx} + \eta \frac{d\chi}{dy} + \zeta \frac{d\chi}{dz} = 0$$

both of which give the subsidiary system

$$\frac{dx}{\xi} = \frac{dy}{\eta} = \frac{dz}{\zeta}$$

the differential equation of vortex lines. Hence the vortex lines are obtained as the intersection of the surfaces λ = constant, χ = constant. Again, the value of u gives

$$\frac{du}{dt} = \frac{d}{dx}\left(\frac{d\phi}{dt} + \lambda \frac{d\chi}{dt}\right) + \frac{d\lambda}{dt}\frac{d\chi}{dx} - \frac{d\lambda}{dx}\frac{d\chi}{dt}.$$

Substituting in equation (1), we have *at once*

$$\frac{dH}{dx} + \frac{\delta\lambda}{\delta t}\frac{d\chi}{dx} - \frac{\delta\chi}{\delta t}\frac{d\lambda}{dx} = 0$$

where

$$H = \int \frac{dp}{\rho} + V + \frac{d\phi}{dt} + \lambda \frac{d\chi}{dt} + \frac{1}{2} q^2,$$

and δ denotes particle differentiation. Equations (2) and (3) lead to two similar equations, and we have

$$\xi \frac{dH}{dx} + \eta \frac{dH}{dy} + \zeta \frac{dH}{dz} = 0$$

leading to the subsidiary system

$$\frac{dx}{\xi} = \frac{dy}{\eta} = \frac{dz}{\zeta}$$

which denote vortex lines. Hence, we see that it is possible to construct a family of surfaces

$$H = \text{constant},$$

covered over by vortex lines, and the mode of integration shows *immediately* that the constant is a function of the time alone. Therefore, for steady rotational motion we have

$$\int \frac{dp}{\rho} + V + \frac{d\phi}{dt} + \lambda \frac{d\chi}{dt} + \frac{1}{2} q^2 = F(t)$$

along a vortex line.

IV.—*Note on Stokes's Theorem and Hydrokinetic Circulation.*

By Asutosh Mukhopadhyay, M. A., F. R. A. S., F. R. S. E.

[Received March 24th;—Read April 3rd, 1889.]

The object of this note is to give a new proof of Stokes's formula for hydrokinetic circulation

$$\int (u dx + v dy + w dz) = 2 \int\int (l \xi + m \eta + n \zeta)\, d S,$$

and to point out how it is an immediate consequence of the theory of the change of the variables in a multiple integral.

Assume, after Clebsch,

$$u dx + v dy + w dz = d\phi + \lambda\, d\chi,$$

so that the integration being performed round a closed curve, we have

$$\int (u dx + v dy + w dz) = \int \lambda\, d\chi.$$

But, the value of

$$\int \lambda\, d\chi$$

taken round the closed curve is clearly equal to the sum of the values of

$$\int\int d\lambda\, d\chi$$

taken round the projections of the closed curve on the coordinate planes. Now, for the projected curve on the coordinate plane of yz, we have at once from the ordinary formulæ for the transformation of multiple integrals,

$$\int\int d\lambda\, d\chi = \int\int \left(\frac{d\lambda}{dy}\frac{d\chi}{dz} - \frac{d\lambda}{dz}\frac{d\chi}{dy}\right) dy\, dz.$$

The projected curves on the other two coordinate planes lead to two similar expressions. Hence, the circulation round the given closed curve is furnished by

$$\begin{aligned}\int (udx + vdy + wdz) &= \int\int \left(\frac{d\lambda}{dy}\frac{d\chi}{dz} - \frac{d\lambda}{dz}\frac{d\chi}{dy}\right) dy\, dz \\ &+ \int\int \left(\frac{d\lambda}{dz}\frac{d\chi}{dx} - \frac{d\lambda}{dx}\frac{d\chi}{dz}\right) dz\, dx \\ &+ \int\int \left(\frac{d\lambda}{dx}\frac{d\chi}{dy} - \frac{d\lambda}{dy}\frac{d\chi}{dx}\right) dx\, dy.\end{aligned}$$

But, as an immediate consequence of Clebsch's transformation, we have

$$\begin{aligned} u &= \frac{d\phi}{dx} + \lambda\frac{d\chi}{dx} \\ v &= \frac{d\phi}{dy} + \lambda\frac{d\chi}{dy} \\ w &= \frac{d\phi}{dz} + \lambda\frac{d\chi}{dz}, \end{aligned}$$

whence

$$\begin{aligned} 2\xi &= \frac{dw}{dy} - \frac{dv}{dz} = \frac{d\lambda}{dy}\frac{d\chi}{dz} - \frac{d\lambda}{dz}\frac{d\chi}{dy} \\ 2\eta &= \frac{du}{dz} - \frac{dw}{dx} = \frac{d\lambda}{dz}\frac{d\chi}{dx} - \frac{d\lambda}{dx}\frac{d\chi}{dz} \\ 2\zeta &= \frac{dv}{dx} - \frac{du}{dy} = \frac{d\lambda}{dx}\frac{d\chi}{dy} - \frac{d\lambda}{dy}\frac{d\chi}{dx}. \end{aligned}$$

Therefore, putting

$$dy\,dz = l\,dS, \quad dx\,dz = m\,dS, \quad dx\,dy = n\,dS,$$

where l, m, n are the direction cosines of the normal, we have

$$\int (u\,dx + v\,dz + w\,dz)$$

$$= \int\int \left\{ l\left(\frac{dw}{dy} - \frac{dv}{dz}\right) + m\left(\frac{du}{dz} - \frac{dw}{dx}\right) + n\left(\frac{dv}{dx} - \frac{du}{dy}\right) \right\} dS$$

$$= 2\int\int (l\xi + m\eta + n\zeta)\, dS,$$

which is Stokes's Theorem. It is worth noting that as no physical conception enters into the above proof, it holds good whether we regard the theorem as a purely analytical one or as merely furnishing a formula for hydrokinetic circulation.

V.—*On a Curve of Aberrancy.*

By Asutosh Mukhopadhyay, M. A., F. R. A. S., F. R. S. E.

[Received May 23rd;—Read June 5th, 1889.]

If a curve be referred to rectangular axes drawn through any origin, the coordinates (α, β) of the centre of aberrancy, which is the centre of the osculating conic at any given point (x, y) of the curve, are given in the most general form by the system

$$\alpha = x - \frac{3qr}{3qs - 5r^2}$$

$$\beta = y - \frac{3q\,(pr - 3q^2)}{3qs - 5r^2}$$

where p, q, r, s are the successive differential coefficients of y with respect to x.* The locus of (α, β) is called the aberrancy curve of the given curve, and in this note, I shall investigate the aberrancy curve of a plane cubic of Newton's fourth class†

$$y = ax^3 + 3bx^2 + 3cx + d$$

in which the diametral conic degenerates into the line at infinity.

We have

$$p = 3\,(ax^2 + 2bx + c)$$
$$q = 6\,(ax + b)$$
$$r = 6a$$
$$s = 0$$

* J. A. S. B. 1888, vol. lvii, part ii, p. 324.

† Salmon's Higher Plane Curves, (Ed. 1879), p. 177.

whence

$$pr - 3q^2 = 18\,(ac - b^2) - 90\,(ax + b)^2$$

$$\alpha = \frac{8x}{5} + \frac{3b}{5a}$$

$$\beta = y + \frac{ax + b}{10a^2}\left\{18\,(ac - b^2) - 90\,(ax + b)^2\right\}$$

Therefore

$$x = \frac{3\alpha}{8} - \frac{3b}{8a}$$

$$ax + b = \frac{5}{8}\,(a\alpha + b)$$

and

$$y = \beta - \frac{9\,(a\alpha + b)}{8a^2}\left\{(ac - b^2) - \frac{125}{64}\,(a\alpha + b)^2\right\}$$

But from the equation of the curve we have

$$a^2y = (ax + b)^3 + 3a\,(ac - b^2)\,x + a^2d - b^3.$$

Therefore, substituting for x and y in terms of α and β, we have

$$64\,a^2\beta = -125\,a^3\alpha^3 - 375\,a^2b\alpha^2 + (192\,ac - 567b^2)\,a\alpha + (64a^2d - 189b^3),$$

or, writing x, y for α, β, we see that the aberrancy curve of the plane cubic

$$y = ax^3 + 3bx^2 + 3cx + d$$

is another plane cubic of the same class

$$y = Ax^3 + 3Bx^2 + 3Cx + D$$

where

$$A = -ka$$

$$B = -kb$$

$$C = -kc + (1 + k)\,\frac{ac - b^2}{a}$$

$$D = -kd + (1 + k)\,\frac{a^2d - b^3}{a^2}$$

$$k = \frac{125}{64}.$$

If, therefore,

$$H = ac - b^2,\ G = a^2d - 3abc + 2b^3$$

be the invariants of the given cubic, and H', G' the corresponding quantities for the aberrancy cubic, *viz.*,

$$H' = AC - B^2,\ G' = A^2D - 3ABC + 2B^3,$$

we have by direct calculation

$$H' = -kH$$

$$G' = k^2G.$$

It follows, therefore, that the quantity

$$\frac{H^2}{G} = \frac{(ac - b^2)^2}{a^2d - 3abc + 2b^3}$$

is an invariant for the given cubic and its aberrancy curve.

If we seek the common points of intersection of the two cubics, we find on subtracting the equations

$$(ax + b)^3 = 0$$

which shews that the two cubics have only one common point of intersection which is the point of inflexion for both; the coordinates of the point are

$$x = -\frac{b}{a}, \quad y = \frac{G}{a^2}$$

VI.—*Natural History Notes from H. M. Indian Marine Survey Steamer* 'Investigator,' *Commander* Alfred Carpenter, R. N., D. S. O., *commanding.*—No. 15. *Descriptions of seven additional new Indian Amphipods.*—*By* G. M. Giles, M. B., F. R. C. S., *late Surgeon-Naturalist to the Survey.*

[Received and Read November 6th, 1889.]

(With Plate II.)

Before proceding to the description of the species now described, I have to make a correction in my last paper read on February 1st, 1888.

In that communication, I described, under the name of *Concholestes dentallii*, gen. et sp. nov., a curious corophiid which inhabits deserted dentalium shells; remarking that I believed that such a habit had not been previously noted in an amphipod. I find, however, I was in error in this matter, as, while searching for references to species which might be identical with those described in the present paper, I came across a description of a Norwegian species which is certainly congeneric and, like the Indian species, inhabits deserted dentalium shells. Sars (Forh. Vidensk.-Selsk. Christiania, 1882, No. 18, pp. 113, Part VI, fig. 7) describes this species as *Siphonœcetes pallidus*.

I do not see, however, how either Sars' or my species can be included in *Siphonœcetes* without unduly straining Kroyer's definition of the genus in Nat. Tidskr. I, p. 491. In the two species under consideration, the 1st and 2nd gnathopoda, instead of being subequal, present a very marked difference of size; and again, the eighth thoracic appendages are very long, instead of the 6th, 7th, and 8th being "very short." My species too wants the double hook to the single ramus of the last

abdominal appendage, having indeed no rami, and, as far as I can make out, Sars' species agrees in these particulars also.

It appears to me therefore preferable that Sars' species should stand as *Concholestes pallidus* (Sars).

While, however, certainly congeneric, the two species are without doubt specifically distinct, mine differing from *C. pallidus* in the even more marked disproportion between the second and third thoracic appendages, and in the third having a much better developed subchela, which is formidably armed with two strong teeth, as also in having the excessive length of the eighth less marked.

MELITA COTESI, n. sp., Pl. II, Fig. 1.

This species is allied to *M. leonis* and *M. formosa* described by Murdoch, P. U. S. Nat. Mus., VII, pp. 521.

It illustrates the danger of naming a species from what may, at first sight, appear a very prominent peculiarity. In a previous communication, I described a *Melita* which I named *megacheles* on account of the large size of the subchela of the second gnathopod, which appeared larger proportionally than that of any species which I could find described. Our present find, however, out-herods Herod in this particular, and fearing to use any superlative appellation, lest another even more formidably armed should turn up, I name it after Mr. Cotes of the Indian Museum, but for whose kindness in undertaking the wearisome work of searching through references while I was at sea, this series of papers on Indian Amphipoda would have been greatly delayed in appearance.

About 7 mm. long; semitransparent, with minute reddish dots scattered over the whole surface, and an especially large patch on the propodite and basipodite of the second gnathopod.

Head small, no larger than an average thoracic segment; eye small, round, placed in the angle between antennules and antennæ.

Thoraæ forms more than half the length of the body; coxal plates rather narrow, especially the hinder ones.

Abdomen relatively small, the hinder edge of each segment save the last shewing more or less distinctly three dentations on either side of the middle line.

Antennules nearly as long as the head and thorax, the peduncle, the second joint of which is considerably the longest, forming rather the shorter half; appendix three-jointed.

Antennæ rather shorter, the peduncle, whose first three joints are very short, having the last two joints so long that the entire peduncle forms at least two-thirds of the length of the organ.

Maxillipedes moderately large, subpediform.

The 2nd of the *thoracic appendages* small, barely subchelate. The 3rd of the left side is enormously developed. The propodite alone as long as the first five segments of the thorax and wider than the depth of the body including the coxal plates. The inferior border smooth with one broad lunate projection. The dactylo-podite proportionally large. The appendage of the left side barely subchelate and but little larger than the second appendage. The 4th small, and the 5th almost minute. The 6th, 7th, and 8th large, the seventh being the largest and as long as the head and thorax, while the eighth falls but little short of it.

The *gill plates* are exceptionally large.

The *abdominal appendages* are small, but call for no special remarks, being in every way normal and typical of the genus.

Hab. Andaman Islands, in shallow water.

Phoxus uncirostratus, n. sp., Pl. II, Fig. 2.

This species was dredged in 5—10 fathoms off the "Seven Pagodas" on the Madras coast on a sandy bottom.

It is about 5 mm. in length and of a uniform dirty white colour.

The *head* is small, the arched and excavated rostrum considerably exceeding the head proper in length. The former is long and pointed, and is bent down at the tip so as to form a distinct hook, a feature in which it appears to differ from all the previously described members of the genus.

The *thorax* is large, forming nearly half the entire body length, and this portion of the body, excluding the coxal plates, is depressed rather than compressed. The first four coxal plates are very large, exceeding their corresponding segments in depth, the fourth being of exceptional size; they, besides being the deepest, are of great width, exceeding in this diameter the length of any two of the thoracic segments; the three hindermost coxal plates, on the other hand, are exceptionally small.

The *abdomen* is of moderate size, its first four segments being of nearly equal length, while the last two are extremely small.

The *telson* is small and cleft, and is furnished with a few fine hairs.

The *antennule* is as long as the head and first thoracic segment together, the peduncle forming rather the shorter portion of the organ. Its first joint is very long and stout, but is almost completely hidden under the excavated lower surface of the rostrum, the remaining two joints of the peduncle being short, and comparatively slight. The flagellum consists of 14—16 short articuli, and is but little longer than

its appendage, which consists of about twelve joints, and almost exactly equals the peduncle in length.

The *antenna* is subequal to the antennule in length, and is quite equally divided into peduncle and flagellum, the first of the five joints of the former being hidden beneath the rostrum.

The *gnathites* are small and weak, the mandibles being quite simple, and armed with a small cutting and a serrated masticatory tubercle; its appendage is two-jointed, and but feebly armed with hairs.

The maxillæ are proportionally somewhat stouter, and have their rami armed with a number of very stout curved spines.

The maxillipedes are of considerable size, and pediform.

The *gnathopoda* are small, not more than twice as long as the depth of their corresponding coxæ; both are of similar form, subchelate, with the palm oblique, and defined by a large triangular process, but the hinder pair is somewhat the larger.

The fourth and fifth *thoracic appendages* are of the usual ambulatory type, are subequal, and but little exceed the gnathopoda in length. The sixth and seventh resemble each other in form, being stoutly built and laterally armed with strong spines; the seventh, however, is the longer, equalling the entire thorax in length, while the sixth is but as long as its first six segments. The eighth is the shortest of the thoracic appendages, and is of peculiar form, its basipodite being expanded into a broad oval plate which projects downwards behind the distal articulation of the appendage, so as almost to reach the level of the point of the dactylopodite.

The first three *abdominal appendages* are rather small, but quite of the usual type. Of the last three, the fifth is the shortest. It and the fourth are armed with numerous stout, almost hooked spines; their rami are nearly equal. The sixth is peculiar in having its outer ramus distinctly two-jointed, while the inner ramus is considerably shorter than the first joint of the outer; both rami are armed with a brush of stout hairs.

Although I carefully dissected the head of one specimen, I could make out no trace of eyes.

Ampelisca daleyi, n. sp., Pl. II, Fig. 3.

A single specimen of this species was dredged in 7 fathoms, off the Seven Pagodas, on the Madras coast. Unfortunately the specimen was accidentally destroyed, but not before I had made a drawing.

It differs considerably from its congener previously obtained in Indian waters (*A. lepta* from 107 fathoms) in being a larger and much more robust form, in the minuteness of its superior antennæ, and in

the comparative shortness of the limbs, and appears to most nearly resemble *A. australis*, Haswell, from which, however, it differs in the comparative length of the joints of the thoracic appendages.

My specimen was 11 mm. long; of a pale brown colour liberally marked with patches of a deep brown.

The *head* is small and oval, the two pairs of simple eyes being placed respectively opposite the origins of the antennules and antennæ.

The *thorax* forms more than half the body length, its four anterior segments increase progressively in length, but the three hinder are subequal and longer than any of the other segments, thoracic or abdominal. The first four coxal plates are deeper than their corresponding segments, the fourth being the deepest, and also exceptionally broad. The fifth coxal plate has an anterior lobe of moderate depth, and has the hinder border of the posterior lobe subdivided by a notch into two lobules, of which the upper is the smaller.

The *abdomen* forms rather more than one-third of the entire body length, its first three segments are subequal in length, and each is as long as the remaining three together. Their depth is moderate, not exceeding that of the thoracic segments with their attached coxæ.

The *telson* is small, squamiform, and deeply cleft.

The *antennule* is very minute, being barely as long as the head and first thoracic segment; the first joint of the peduncle is moderately stout, but the remaining two joints can barely be distinguished from the articuli of the flagellum, especially the third, which but little exceeds them in length. The peduncle forms about one-third of the entire length of the organ.

The *antenna* is more than twice as long as the antennule. Its first two joints are short and moderately stout, while the distal three are very long and slender, the third being the longest and the fifth the shortest; the flagellum is composed of a number of long slender articuli, but was broken off, so that the entire length could not be ascertained.

The *gnathites* are completely hidden beneath the opaque first coxal plate.

The second and third *thoracic appendages* (gnathopoda) are small, and have the propodite merely dilated without forming a true subchela. The third is somewhat the larger. The fourth and fifth are of similar form, but the fifth is a little the larger, the fourth being as long as the head and first four thoracic segments. In both, the meropodites are peculiarly long and the carpopodites very short. The last three are remarkable in having their dactylopodites curved backwards, instead of forwards, as is usually the case. The sixth and seventh have the

basipodites much enlarged, especially the latter. Their meropodites are short and their dactylopodites remarkably long and slender, the seventh, which is the longer, is subequal in length to the fourth. The eighth is peculiar in having its posterior border provided with a flat plate which reaches considerably below the articulation with the ischiopodite; the ischio- mero- and carpopodites are subequal, the propodite comparatively long and slender, and the dactylopodite minute.

The first three *abdominal appendages* are of the usual type, and the last three equally biramous and of progressively smaller size, the sixth being proportionally smaller than in nearly any member of the genus, except *A. propinqua*, Boeck., which differs, however, in a number of other points.

LYSIANASSA WOOD-MASONI, n. sp., Pl. II, Fig. 4.

This species was dredged from a coral sand bottom in 17 fathoms in Macpherson's Strait, Andaman Islands.

The animal is 8 mm. long, semitransparent, and colourless, with the exception of the eye, which is of a deep purple tint.

The *head* is small, having, in profile, an irregularly pentagonal outline. The large compound eye occupies the greater part of its anterior half, and the border articulating with the antennule is marked by two notches with a tubercle between them.

The *thorax* forms rather more than half the entire body length, its segments increasing regularly in dimensions from before backwards. All the coxal plates are deep, the fourth, however, markedly exceeding the others. The lower borders of the last three present a notch for the articulation of their corresponding basipodite.

The first three *abdominal segments* are large and subequal; the fourth, nearly as long, but much less in depth; and the last two very small.

The *telson* is laminar and notched.

The *antennule* is as long as the first four thoracic appendages. Its peduncle forms but a third of its length, the first joint being large and having its lower border produced distally into a sort of process, while the last two are extremely short. There is a very minute appendage consisting of four articuli. The first joint of the flagellum is much larger than those that succeed it, approaching the first joint of the peduncle in length. It bears on its lower border a brush of long silky hairs.

The *antenna* is as long as the thorax: its peduncle forms but one-fourth of its length, and consists of two subequal, very short basal, and three, also subequal, somewhat longer, distal joints. The flagellum is made up of a large number of short articuli.

A single specimen only having been obtained, the *gnathites* could not be closelyexamined.

The 2nd of the *thoracic appendages* is very small, not as long as the antennule, and imperfectly subchelate. The 3rd is nearly twice as long as the 2nd, but is scarcely at all stouter, and is provided with an obliquely palmed subchela, the dactylopodite being minute and much curved. The 4th and 5th are ordinary ambulatory legs, moderately stout and subequal to each other, and equal to the 3rd in length. The 6th is barely as long as the 1st gnathopod, and is remarkable for its basipodite, which is of nearly circular outline and very deeply serrate on its posterior border. The 7th is nearly as long as the 2nd gnathopod, and its basipodite has a tendency to the same form as that of the 6th. Its basipodite is rather broader than long, but its borders are quite smooth. The distal joints of each of the last three thoracic appendages are armed with closely set, sharp, short spines.

There is nothing remarkable about the first three *abdominal appendages*, and the last three are equally biramous, armed both on propodite and rami with short, stout spines. The 4th is the longest of the three, and the 5th, the smallest, while the 6th is remarkable for its short, stout, almost spherical propodite, and for the size of its rami, which are larger in all respects than those of the preceding abdominal appendages.

ANONYX INDICUS, n. sp., Pl. II, Fig. 5.

The present species was dredged in 5—10 fathoms off the Seven Pagodas, Madras, on the same occasion as *Phoxus uncirostratus*. In colour it is of a pale earthy white, and it measures about 5 mm. in length.

The *head* is small and oblong, its anterior upper part carrying the large compound eyes.

The *thorax* and *abdomen* are subequal in length, but the abdomen is much the deeper and stouter.

The *thoracic segments* increase somewhat in length and depth from before backwards, but are everywhere narrow. The first four coxal plates are large, the fourth being the largest, and are each nearly twice as deep as their corresponding segments. The last three are markedly smaller and are much narrower than their segments.

The first three *abdominal segments* are large in all dimensions; the fourth is as long as the seventh thoracic segment, and the last two very short indeed.

The *telson* is laminar and double.

The *antennule* is short, the peduncle, which forms the larger half of its length, being barely as long as the head. Its first joint is

nearly spherical, and exceeds a good deal in length either of the remaining two pieces, of which the distal is somewhat the smaller. The flagellum is composed of 12 or 14 short articuli, and its appendage, which is about half its length, of a smaller number of slighter, but otherwise closely similar, pieces.

The *antenna* is slighter but somewhat longer than the antennule. In the female, the flagellum but little exceeds that of the antennule, but, in the male, it often forms a lash of considerable, but variable, length.

The *gnathites* are small and feebly armed, the mandibles having but a simple chisel-like cutting plate, and a two-jointed appendage, and the maxillepedes being small and not pediform.

The first of the *gnathopods* is short, stout, and subchelate, the palm being but somewhat oblique and the dactylopodite short and strong. The second is much longer than the first, but is very slender. Its propodite resembles that of the first in general outlines, but the dactylopodite is so small that it might easily be overlooked, forming only a small extremely hooked claw projecting from the middle of the distal extremity of the propodite. It was only, however, after a repeated and very troublesome examination that I succeeded in getting a clearly uninjured specimen of the appendage to project beyond the coxal plates. In length the second gnathopod almost equals the first six segments of the thorax.

The fourth and fifth *thoracic appendages* are subequal to each other, but shorter and slenderer than any of the other appendages; they are quite of the usual ambulatory type. The sixth, seventh, and eighth closely resemble each other in form, but differ considerably in length, all three having the posterior border of their basipodites provided with very broad and strong buttress-like plates, and the remaining articulations broad and strong; while, however, the eighth is as long as the head and thorax, the seventh is about two-thirds and the sixth a little over one-half this length.

The first three *abdominal appendages* are of medium size and of the usual type. The last three are biramous, the rami of each being equal. The fourth is much larger than the fifth, the sixth still smaller, the entire length of the last only equalling that of the propodite of the fourth.

PARAPLEUSTES PICTUS, n. sp., Pl. II, Fig. 6.

This species appears to answer best to the genus *Parapleustes* proposed by Buchholz (Zweite deutsche nord polar Fahrt, 1866—1870, p. 337) for a species (much resembling the present) which was dredged off

the east coast of Greenland. Our species was dredged in 30 fathoms, in Manner's Straits, Andaman Islands. Found crawling upon a *Pennatula*, the pink and white colours of which are almost exactly imitated in the amphipod.

The distribution of the colouring varies in different specimens. In one, the head and body as far as the fourth thoracic segment and the entire abdomen were pink, while the remaining middle zone of the body was of an opaque glistening white. In another, the distribution was almost reversed, the pink forming a broad band in the middle of the animal. In a third it was almost confined to the hinder part of the body. In all, however, the tints were the same, the pink parts having a uniform transparent character diversified by minute opaque spots of a darker tint, while the white was remarkable for its dead opacity.

The largest specimen measured about 7 mm., the smallest little more than 2 mm.

The *head* is rather long and cylindrical, its anterior half being almost completely covered by the eyes, which are of a pink colour, deeper than any other part of the body.

The remainder of the length of the body is almost exactly divided between *thorax* and *abdomen*, the latter, however, being much the deeper. The segments of the thorax are of nearly equal length throughout, but the more posterior are much the deeper. In the abdomen the third segment is considerably the longest, while the second exceeds the rest in depth, as well as all, save the third, in length.

The fourth abdominal segment is nearly as long as the first, but very narrow, while the last two are very small in all dimensions.

The *telson* is simple and squamiform, equalling in length the protopodite of the sixth abdominal appendage. It is armed with a few fine hairs.

The first four *coxal plates* are very deep and broad, the fourth being the largest, the last three comparatively small. Spence Bate (Ann. Nat. Hist. Ser. 3, Vol. I, p. 362, 1858), in his definition of the genus, states that the "Coxa of the second pair of pereiopoda" (fourth coxal plate) is "very deeply excavated upon the upper part of the posterior margin to receive the coxæ of the third pair of periopoda." This is, however, more apparent than real, at any rate in the present species; the appearance being the optical expression of the fact that the fifth coxal plate overlaps the fourth as well as the sixth, the upper part of the former not being remarkably excavated, but narrowing uniformly to its articulation with the pleuron of its segment.

The *antennule* has a three-jointed peduncle not exceeding the head and first thoracic appendage in length. The first joint is somewhat

longer than the second, while the third is very short. The flagella of both antennæ vary somewhat in length in various specimens, the number of articuli, however, remaining about the same, the increase being gained by an elongation of all the pieces. In the specimen figured the flagellum but slightly exceeds the peduncle in length, but in others it was considerably longer. There is no appendage to the flagellum.

The first three joints of the peduncle of the *antenna* are very short and, except the end of the third, hidden beneath the excavated cephalon. The last two joints equal in length the first two of the antennule. The flagellum also varies in length, but is always about a third shorter than that of the antennule.

The *gnathites* were not dissected out, but a mandibular appendage was distinguished, and it could be seen that the maxillipeds are small but pediform.

The two pairs of *gnathopoda* closely resemble each other alike in size and form. Both are feebly subchelate, with the palm oblique, the propodite forming about one-third of the entire length exclusive of the dactylopodite. Their carpo- mero- and ischiopodites are shorter than their breadth, while the basipodites form nearly a half of the length of the appendage exclusive of the dactylopodite.

The 4th and 5th *thoracic appendages* are of the usual ambulatory type, are subequal to each other, and, in length, to the gnathopoda, each being as long as the head and first five thoracic somites. They are very slender and closely resemble each other in all particulars. The 6th, 7th, and 8th closely resemble each other in all points save in size, each being stoutly built and having the basipodite provided with a strong buttress-like plate along the posterior border. The 7th and 8th are subequal, being as long as the thorax and the first two abdominal segments, but the sixth is about one-sixth shorter.

The first three *abdominal appendages* are small, but quite of the usual type. The last three are biramous, with equal rami; the fourth being the longest and the sixth the shortest of the three. The fourth and fifth have their rami armed with stout spines, while the sixth has only fine hairs.

Cyrtophium andamanense, n. sp., Pl. II, Fig. 7.

Taken in the surface net at Port Mouat, Andaman Islands. Only a single specimen was obtained and this was swimming free, nor could any trace of a tube he found; probably this had got destroyed by the wash of the tide.

The animal is about 3 mm. long and of a dirty white colour, sparely sprinkled with minute dark brown spots.

Its nearest allies appear to be *C. orientale*, Dana, and *C. cristatum*, Thomson, from the former of which it differs in its superior antenna being proportionally smaller, in the comparative shortness of the dactylopodite of the second gnathopod, and in the details of the armature of the hinder pleopoda; and from the latter in both pairs of antennæ being proportionally smaller and in wanting any marked crest on the hinder part of the thorax.

The *head* is subquadrate, rather deeper than long, its length forming only one-eighth of the entire body length.

The small *eye* is placed on a prominence opposite the origin of the antenna.

The *thorax* is long, forming three-sevenths of the entire length. Its segments are long and slender, the anterior and posterior ones being larger than those at its mid length, and the fifth segment exceptionally small.

The *abdomen* is small and, like the thorax, slender. Its first three segments are rather shorter than average thoracic segments. The fourth, though narrow, is longer than the others, while the fifth and sixth are extremely small.

The *telson* is small and laminar, and is armed with a few short, stiff hairs.

The *antennule* is fully as long as the head and first four thoracic segments. More than three-fourths of its length are formed by the peduncle; the first joint of which, though very stout, is shorter than either of its two other joints, while the second is considerably the longest. There is a minute secondary appendage, consisting of four short joints. The flagellum is only as long as the first joint of the peduncle; it too consists of four joints, the first of which forms quite half its length. The entire inferior surface of the appendage is armed with closely placed long hairs.

The *antenna* is as long as the head, thorax, and first two abdominal segments; it is very stoutly built and adapted for climbing. The first three joints of its peduncle are short and together as long as the flagellum, while the two distal joints are subequal, and form two-thirds of the entire length of the organ. The flagellum consists of two stout long joints, which are armed with strong hooked spines. The entire lower surface of the peduncle being furnished with long stiff hairs, like those on the superior antenna. Its last joint is armed with two pairs of stout, hooked spines, and by a hooked terminal nail.

The *gnathites* could not be closely examined, but it could be seen that the mandibular appendage is large and clawed, and that the maxilliped is exceptionally large and pediform.

The first of the *gnathopods* is small, being no longer than the first two joints of the peduncle of the superior antenna; nearly half its length is made up by the basipodite. The articulation between the ischiopodite and meropodite is very oblique, and the appendage appears to consist of but five pieces, owing probably to the dactylopodite being fused with the propodite, the subchela being formed between these and the dilated carpopodite. The second is very much larger than the first, being nearly as long as the head and entire thorax; it, however, resembles it closely in general form, and like it is composed of but five pieces.

The fourth and fifth *thoracic appendages* are subequal and exactly similar, and have the distal extremities of their articuli dilated so as to admit of very free flexion, but are otherwise of the usual ambulatory type. In length they nearly equal the first six thoracic segments. The sixth, seventh, and eighth much resemble the fourth and fifth but are stouter built, and, while the sixth is only subequal to them, the seventh is as long as the antennule, and the eighth as long as the antennule except the last joint of the flagellum.

The first three *abdominal appendages*, though of the usual type, are exceptionally small. The fourth is as long as the last joint of the peduncle of the antennule, its propodite forming half its length. Its rami are unequal, the outer being hardly more than half the length of the inner, both rami and peduncle being armed with stout spines. The fifth is only two-thirds the length of the fourth, but is stouter; like the fifth, its rami are unequal and spinose. The sixth is reduced to a rudimentary tubercle, armed with one or two spines.

EXPLANATION OF PLATE II.

Fig. 1. *Melita cotesi*, × 20; 1*a*, 2nd and 3rd right thoracic appendages, × 10.

Fig. 2. *Phoxus uncirostratus*, × 15; 2*a*, mandible and appendage, × 30; 2*b*, the maxillæ, × 120; 2*c*, the 6th abdominal appendage, × 30.

Fig. 3. *Ampelisca daleyi*, × 7.

Fig. 4. *Lysianassa wood-masoni*, × 10.

Fig. 5. *Anonyx indicus*, × 12·5; 5*a*, distal joints of 3rd thoracic appendage, × 50.

Fig. 6. *Parapleustes pictus*, × 15.

Fig. 7. *Cyrtophium andamanense*, × 25; 7*a*, flagellum of inferior antennæ, × 30; 7*b*, last three abdominal segments with appendages, × 30.

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VII.—*A Descriptive List of the* Uredineæ *occurring in the Neighbourhood of Simla (Western Himalayas).* Pt. III.—*By* A. Barclay, M. B., *Bengal Medical Service.*

[Received January 27th;—Read February 5th, 1890.]

(With Plates III.—VI.)

In this third instalment of a descriptive list of the *Uredineæ* of Simla (in continuation of the second part in this Journal, Vol. LVIII, Pt. II, 1889), I complete a description of all the species known to me up to the present time. The present part includes descriptions of 6 species of *Uromyces*, 4 of *Phragmidium*, 3 of *Melampsora*, 3 of *Coleosporium*, 1 of *Gymnosporangium*, 2 of *Chrysomyxa*, 2 of *Cæoma*, and 6 of isolated *Uredo* forms. I have also added descriptions of four *Aecidial* forms, which should have been included in Part I of this List, and seven species of *Puccinia*, which should have found a place in Part II.

I must here express my obligations to Dr. George Watt, C. I. E., for his kind and ever ready help in determining the species of many hosts.

UROMYCES, Link.

There are remarkably few of these in this region, only six species so far as I am at present aware, and all but one on the higher phaner-

ogamous plants, the exceptional one being on a grass. The most remarkable of these is *U. Cunninghamianus*, presenting extremely anomalous characters. Another interesting species is that on *Strobilanthes*, as this host also bears an *Aecidium* which is, however, in no way related to the teleutosporic fungus.

a. HEMIUROMYCES, Schröter.

1. Uromyces Vossiæ, nov. sp.

On *Vossia speciosa*, Benth.

This grass is sometimes largely attacked by a species of *Uromyces*. In August the leaves may be seen in commencing attack with the formation of brown uredo pustules on the under leaf surface. These pustules are small, oval or linear, and isolated.

The *uredospores* are brownish, with sometimes a tinge of orange red, very deciduous, falling off without any portion of stalk adhering. The cell wall is uniform in thickness, and presents three or four pores, easily seen by treatment with sulphuric acid. They measure on an average 24 × 19·2μ, varying from 25 × 22 to 23 × 17μ. The epispore is finely warty. They germinate in water in the usual way, throwing out a simple germ tube (fig. 1, Pl. I.)

Late in the year *teleutospore* pustules are formed. These are well raised oval or linear dark brown sori, also hypophyllous. The spores are very readily detached, coming off with a small portion of stalk adhering. They do not germinate on maturing, but only after a period of rest. These are thicker walled than the uredospores, and are especially thickened at the apex. They measure from 24 × 21 to 29 × 22μ, when fresh and examined in water. In spring they germinate very readily in water (fig. 2, Pl. I.)

b. UROMYCOPSIS, Schröter.

2. Uromyces Cunninghamianus, Barclay.

On *Jasminum grandiflorum*, L.

For a complete description of this parasite I must refer the reader to a paper on its life history read at the Linnean Society on the 18th December, 1889. The diagnostic characters of the species are as follows:

Towards the end of August the leaves and smaller stems of the host are largely attacked in the aecidial stage, and these are then much hypertrophied. The peridia burst in a stellate fashion, allowing the orange red aecidiospores to fall out. When these spores have been shed, teleutospores are formed within the old peridia. These teleutospores are

adherent, and remain in a quiescent state until the following year, when they germinate and reproduce aecidia on the newly developed leaves. Experimental evidence, which will be found detailed in the above-mentioned paper, fully confirmed the autœcious nature of the fungus.

The *aecidiospores* are round or oval pale yellow bodies, and measure on an average 16μ in diam. They are tuberculated on the outer surface. Their mode of germination is quite peculiar. A germ tube is emitted, about 35μ in length, which then divides into two by a transverse septum, and each part forms a long narrow sterigma, which, however, forms no sporidium, but directly penetrates the host to form another mycelium, bearing aecidiospores at first (but no spermogonia) and teleutospores later.

The *peridium* is formed of a single layer of cells about 26 × 19μ in size.

The *spermogonia* accompany the first crop of aecidia: they are not numerous, and measure about 145μ in depth and width. They have a tuft of protruding paraphyses.

The *teleutospores* are brown single-celled bodies, thickened at the free end, firmly adherent to their beds, becoming detached with a portion of stalk adhering. They measure 36 × 20μ on an average. They germinate after a winter's rest in the usual way, each promycelium forming three sporidia as a rule, but sometimes four.

The *sporidium* is oval, and measures 12 × 8μ to 14 × 10μ. Secondary sporidia are abundantly formed, often before the primary one has become detached.

3. Uromyces Valerianæ, Schum.

On *Valeriana Wallichii*, D. C.

For a description of this species see the Journal of this Society, Vol. LVI, Part II, No. 3, 1887, page 352.

Dr. P. Dietel (Leipzig) to whom I sent specimens of this fungus thinks it is a new species.

c. LEPTUROMYCES, Schröter.

4. Uromyces Solidaginis, Niessl.

On *Solidago Virgaurea*, L.

This host may be found in some localities largely attacked in August and September. Attention is drawn to the fungus by the circular discoloured patches produced, mostly on the radical leaves, but sometimes also on higher leaves. An attacked plant, however, does not usually form a flowering stalk. These discoloured patches (pale yellow)

when first coming to notice are about 5 m.m. in diameter, and then bear but a few spore pustules on the lower surface; but as they grow older they enlarge, become paler, and therefore more conspicuous, bear very numerous minute pustules, still mostly on the lower surface, but a few isolated ones on the upper surface also. An old patch may attain a diameter of 1 c.m. A single leaf may bear from 1 to 30 patches and even more. The spore pustules are minute brown sori, with the spores fairly adherent. If these spores be examined they are found to be teleutospores; there are no uredospores. A careful search over both the upper and lower surfaces of patches disclosed no spermogonia, even on the youngest.

Each spore is pale brown, with a small portion of stalk adhering, much thickened at the apex, and with a clearly defined nucleolar space. Through the apical thickening a germ pore may be seen. The free end of the spore is usually rounded, but is sometimes conical, and may even be pointed. The surface of the spore is smooth. The fresh spores examined in water measure 27 to 30 by 17μ, the apical thickening being 10μ. These spores germinate at once, if placed in water in a watch glass, in the usual way, producing four sporidia on long narrow sterigmata. The sporidia are round to oval, measuring from 10μ in diameter to 12 × 10μ. These also germinate readily. If the spores are placed in a hanging drop of water, with very little air, the peculiar germination described by Kienitz-Gerloff as occurring in *Gymnosporangium* spores takes place. That is to say, the end of the promycelium breaks up into three or four cells, which become detached, and which further germinate by throwing out a germ tube. I have already described this in a paper on the life history of *Cæoma Smilacis*, the teleutospores of which exhibit the same phenomenon.* These detached cells, which apparently act as sporidia, measure from 8 × 8 to 18 × 9μ, or on an average of several measurements 14·0 × 8·1μ.

d. MICRUROMYCES, Schröter.

5. UROMYCES STROBILANTHIS, nov. sp.

On *Strobilanthes Dalhousianus*, Clarke.

In autumn the leaves of this host bear numerous pustules on the lower surface. Whilst it is common in some years it is rare in others. I could not, for instance, find any in 1889. The spores are very firmly adherent to their beds and when scraped off retain a portion of stalk. They are more or less elongated bodies, reddish brown by transmitted

* Scientific Memoirs by Medical officers of the Army of India, Part IV, 1889.

light, with the free end considerably thickened. When well moistened the spores measure from 26 × 16 to 34 × 14μ, or on an average of several measurements 30·4 × 14·6μ. The length of the stalk adherent is usually about 40μ. They germinate only after a period of winter rest; at least they do not germinate in autumn; but I have not observed their germination in spring.

This teleutospore has no genetic relationship with the *Aecidium* borne by the same host.*

6. UROMYCES MCINTIRIANUS, nov. sp.

On *Hemigraphis latebrosa*, Nees.

This fungus was collected by Mr. A. L. McIntire, of the Forest Department, in the Simla region; but I have not myself found it. The pustules are circular, minute, coalescing, and mostly hypophyllous. The spores are brown, coming off with a long piece of stalk attached. They are oval, contracting slightly towards the stalk, slightly thickened at the apex which is rounded, and quite smooth on the surface. Among them are a few two-celled spores (*Puccinia*) and some fewer single celled but much larger spores, possibly though not probably of the nature of uredo-spores. The teleutospores vary considerably in size, 33 — 24 × 26 — 18μ, when just moistened. The few two celled spores measured 38 — 32 × 24 — 16μ. These spores are also brown, rounded at both ends, smooth, and with little or no constriction at the septum. The large single-celled spores measured 36 — 34 × 27 — 22μ. None of these spores germinated when placed in water; but they had been preserved some months in botanical drying paper.

Remarks.—As far as I am able to determine this is a new species and I have named it after the collector.

PHRAGMIDIUM, Link.

a. EUPHRAGMIDIUM, Schröter.

1. PHRAGMIDIUM SUBCORTICIUM, Schrank.

On *Rosa moschata*, Mill.

I found this host attacked by a species of *Phragmidium* early in September. The leaves bore at this time both yellow uredo- and black teleutospore pustules, the latter readily distinguishable from the species on *Rubus* by their smaller size, and by their irregular and general distribution over the lower leaf surface, instead of being in special cir-

* Scientific Memoirs by Medical officers of the Army of India, Part II, 1886.

cular patches on the leaves. On examining the yellow pustules they were found to contain numerous uredospores, with some immature looking yellow teleutospores, while the black pustules contained mostly dark brown teleutospores. These spores were put at once into water, and while the uredospores germinated in the usual way no teleutospore did so.

The *uredospores* are angular orange red bodies, with an epispore beset with numerous warts (almost spines) and punctured by 7 to 9 germ pores. They measure about 26 to 30μ in diameter. Only one germ tube is emitted by each spore.

The *teleutospores* are readily distinguished from those on *Rubus* by their pointed or mucronate ends. In young pustules some teleutospores are orange yellow, though most are dark brown. They are also more divided, each containing usually 7 or 8 cells, but sometimes even ten. They measure about 100 × 33μ (an unusually long spore with ten compartments measured 126 × 33μ). The spores are covered with coarse warts. Another peculiarity consists in a very well marked bulging in the stalks with a cavity containing yellowish granular matter (fig. 3, Pl. I). These spores germinate only after a period of winter rest. In April I obtained sporidial formation in spores I had kept since the preceding autumn. The sporidia are spherical, bright orange red, and 9·5 to 12·5μ in diameter.

The *aecidial stage* consists in the formation of very bright orange red beds, sometimes of very extensive area. These beds are formed on the leaves and on the smaller stems, and the mycelium bearing them always gives rise to hypertrophy, sometimes very excessive, on the stems. In the latter situation the hypertrophy is due to an excessive enlargement of the parenchyma cells between the hypoderma and the central vascular bundles. This stage is met with throughout the summer months. The aecidiospores are given off in long chains, but there is no peridium of any kind. The margin of beds is, however, fringed with club-shaped paraphyses. In this stage spermogonia are numerous. They are superficial, and frequently coalescing groups of them may be found on the upper leaf surface opposite a bed of spores below. The aecidiospores are pale orange red or yellow oval bodies, measuring on an average 20 × 17μ. The epispore is thick and beset externally with tubercles.

A bush in my garden is frequently attacked with this aecidium-bearing fungus, but curiously enough it never bears teleuto- or uredospores.

Remarks.—This is probably *Phragmidium subcorticium*, but the hyaline point at the free end of the teleutospores is not nearly so long as is given by Schröter and Plowright in their works. I would also

draw attention to the resting property of the teleutospores which is in strong contrast with the immediate germinability of the next species.

b. HEMIPHRAGMIDIUM, Schröter.

2. PHRAGMIDIUM RUBI, Pers. ?

On *Rubus lasiocarpus*, Smith.

A *Phragmidium* on this host is fairly common. On the 21st February I collected some leaves bearing both yellow uredo-like pustules and black teleutospore pustules on separate green leaves. Both kinds of pustules are hypophyllous, in scattered circular pustules, indicated above by a brownish red discoloration of the leaf, especially marked in the case of teleutospore formation. I put some spores from each kind of pustule into growing cells on the following day; but whilst none of the teleutospores from the black pustules germinated, several of those contained in the yellow pustules did so freely, forming ordinary promycelia, dividing into four parts, each bearing a sporidium at the end of a pointed sterigma (fig. 5, Pl. I). The sporidia are round orange yellow bodies, 8 to 10μ in diameter, the diameter of the promycelial tube being 8μ. These latter teleutospores were among numerous uredospores, and were orange red in colour as contrasted with the deep brown of the former teleutospores, which would not at this time germinate. The orange yellow teleutospores were evidently just formed, and, indeed, but for their ready germinability, would be described as immature spores, the more so as they contain fewer cells than the brown spores, namely, 3 to 5 cells against 5 to 7 in the brown spores. Curiously enough the uredospores, which were in the majority in such pustules did not germinate in the cultivations in which the young teleutospores did.

The *uredospores* are round pale orange yellow bodies, with numerous club-shaped paraphyses among them. They are tuberculated on the surface, and measure about 21μ, in diameter. I never succeeded in observing their germination (fig. 6, Pl. I).

Later in the year, from July to December, fresh crops of black teleutospore pustules are produced, without any uredospores. Some of these later teleutospores, which are dark brown and many-celled (on an average six-celled), I put into water on the 10th September, and now they germinated very freely, producing immense numbers of sporidia (four to each promycelium), round or pyriform in shape, orange yellow in colour, and 10 to 12μ in diameter. These brown teleutospores measure on an average 100·8 × 37μ; but of course they vary consider-

ably, especially in length. The free end of the spore is rounded, with occasionally a minute knob. The surface of the spore is beset with tubercles (fig. 4, Pl. I).

I have never seen any aecidial form of this species.

I may add that I collected some of these teleutospores from green leaves in the middle of December, and placing them in water found that they germinated very freely, even so late in the year as that.

Dr. P. Dietel is inclined to think this is a new species as it differs from *Phr. Rubi* in having thick stalks and in frequently wanting an apical cone. He thinks it comes near the Australian *Phr. Barnardi*, Plow et Winter though the latter has lighter coloured spores and forms small punctiform pustules.

c. PHRAGMIDIOPSIS, Schröter.

3. Phragmidium quinqueloculare, nov. sp.

On *Rubus biflorus*, Ham.

In April, the stems bear orange yellow pustules, the leaves very rarely. These are probably aecidia. The spores are brilliantly orange red, bluntly angular with slight thickenings at the angles, and densely beset with warts. The fresh spores measure 24 — 20μ. in diameter. The margins of the pustules are surrounded by club-shaped paraphyses. On applying sulphuric acid (with a view to determining the existence of germ pores, in which I was unsuccessful) the spores first turn deep blue and then later pale blue. The spores germinate readily in water throwing out exceedingly long slender unbranched tubes.

On old dead leaves I found numerous minute, circular, discrete, black teleutosporic pustules, very unlike those of *Phr. Rubi* (above described) to the naked eye. The teleutospores are mostly brown, but some are orange red, and are very regularly divided into 4 to 5 cells, each well rounded, with a minute, colourless rostrum at the free end. The stalk is slightly bulged, and contains a cavity. They measure 80 — 64 × 22 — 20μ. The length of each cell is about 12 — 13μ. I could not determine the number of germ pores to each cell.

After a winter rest the teleutospores germinate freely. The procelia before forming sporidia are filled with orange red matter. The sporidia are spherical and orange red, measuring 12μ in diameter, and are borne on fairly long narrow and pointed sterigmata.

Remarks.—I do not think this fungus is identical with *Phr. Rubi* Pers, *Phr. violaceum* or *Phr. Rubi-Idaei*, Pers. I have regarded it as a new species provisionally; but it is difficult to be certain about this.

d. PHRAGMIDIUM (INCOMPLETE.)

4. PHRAGMIDIUM INCOMPLETUM, nov. sp.

On *Rubus paniculatus*, Smith.

In March I found the leaves of this host bearing the uredospores (aecidiospores?) of some species of *Phragmidium* probably, which I have not been able to determine, never having seen the teleutospores. It was found in a deep valley near Simla. The nerves of the leaves were mostly attacked, and in such places they were distinctly hypertrophied: a few pustules were also found, however, upon the blade proper. The pustules were entirely hypophyllous, but their places were indicated on the upper surfaces of the leaves by reddish brown spots of discolouration. The pustules were light yellow and small.

The spores are yellow, round to oval, beset with prominent spines, and measured when fresh $34-30 \times 25-23\mu$. There are no paraphyses. They germinated readily in water, throwing out single long unbranched straight tubes, mostly aerial.

Remarks.—In this incomplete stage it is impossible to identify it with any known species.

MELAMPSORA AND COLEOSPORIUM.

I have found considerable difficulty in separating certain Uredines into *Melampsora* and *Coleosporium*, mainly because I have not been able to observe the germination of the teleutospores sufficiently accurately. Apart from this, however, the morphological characters of each group are sufficiently definitely set forth in Winter's work* to enable one to separate them with confidence, were these characters maintained in each species. For example, it is stated that in the genus *Melampsora* the teleutospores are single-celled, or vertically divided, rarely horizontally, and that the uredospores are borne singly on basidia; whilst in the genus *Coleosporium* the teleutospores consist of several, usually four, superimposed cells, and the uredospores are in short chains. But in the case of the Simla forms these characters are not separately maintained, for whilst in some species the teleutospore forms conform with the description of *Melampsora* spores the related uredospore forms resemble *Coleosporium* forms. This is the case, for example, with the parasites on *Hypericum* and *Leptodermis*. In these species the teleutosporic forms are distinctly of the *Melampsora* type, whilst the uredos being in well defined chains, resemble *Coleosporium*. As the teleutospores are the more important I have considered these forms species of *Melampsora*.

* "Die Pilze Deutschlands," &c.

In only one species, namely, that on a species of *Salix*, do the characters of the teleutospores and uredospores coincide with the descriptions given by Winter. This would appear to show that the distinctive characters of the uredospore formation in the two genera as usually given, are not of generic value. Lastly, I would draw special attention to the formation of spermogonia in one of these fungi, namely, on *Hypericum*. So far as I am aware the existence of this form of fructification has never yet been observed in any other species either of *Melampsora* or of *Coleosporium*.

MELAMPSORA, Castagne.

a. HEMIMELAMPSORA, Schröter.

1. Melampsora Sancti-Johannis, nov. sp.

On *Hypericum cernuum*, Roxb.

This is a very remarkable parasite, causing very noticable abnormalities in the host; for not only are its leaves sometimes covered with conspicuous localised patches of discoloration, but whole shoots are often involved (fig. 3, Pl. II). In the latter case the shoot is, before the formation of teleutospores, of a sickly pale yellowish green colour; often hypertrophied when quite young; but this hypertrophy is masked later on by arrested growth of the shoot, and the normal shoots of equal age continuing to grow throw the attacked shoots out of comparison. The leaves borne by such attacked shoots are always considerably smaller than healthy ones. The fungus in one form or another is to be met with almost throughout the year upon the living host. It is extremely common in this neighbourhood, and plants are often met with completely eaten up with it. The normal course of the fungus through the year is as follows:

In early spring (March) both the localised leaf patches and wholly involved shoots are abundantly met with; but the latter are always more abundant than the former. In April some uredo pustules are formed on both localised patches and on the leaves of wholly involved shoots; but much oftener on the latter. These pustules are, however, very uncommon, and must be looked for diligently. I have found them only in April. During the time uredo pustules are formed spermogonia also are found on the same leaves. These are mainly epiphyllous, though a few may be found also on the lower surface. The uredo pustules are minute circular pale yellow sori, mostly hypophyllous. After April there is a cessation of activity in the reproduction of the fungus until July. In this interval, however, if from unusual wet weather new shoots are formed by the host, some of them are found

attacked. Under similar circumstances a few localised patches are also found; but as a rule the interval is one during which the fungus is comparatively rare. Early in July, after the commencement of the rains, the host puts forth new shoots abundantly, and many of these are then found to be wholly attacked; localised patches are very rare, and almost entirely absent. The September, towards the end of the rains, localised patches are again formed, and become fairly abundant, though not so abundant as in spring. Lastly, from October to spring the fungus is again rare in both forms; and, indeed, in the depth of winter (December to February) it may be said to be absent.

The localised patches are found on quite healthy leaves. When quite young they are circular, very conspicuous, especially on the upper leaf surface, from their yellowish green colour, and measure about 5 m.m. in diameter. The edge of the patch above is often surrounded by irregular reddish brown spots. The patches in time increase considerably in area. A single leaf may contain from 1 to 8 such patches.

The leaves of wholly involved shoots are generally covered on their under surfaces with irregular beds of a brownish orange to deeply orange colour, forming diffused blotches, which often in time coalesce, and uniformly cover the whole of the lower leaf surface. A few such blotches sometimes occur on the upper surface also; but rarely.

The *uredospores* are given off in short chains, and there are no paraphyses among them (fig. 2, Pl. II). They simply burst through the epidermis, a fray of which may be seen on the margin. The whole depth of the uredo bed is about 0·100 m.m. They are very irregular in size and shape, pale orange or yellowish red in colour, with an epispore finely tuberculated. They measure when fresh and examined in water 25·3 × 21·7μ on an average, varying from 22 × 20 to 30 × 28μ. After lying many hours in water they measure 38 × 30·8μ on an average, varying from 25·2 to 44·1μ in diameter. They germinate in water, but not readily, throwing out a simple germ tube. In transverse sections three to four ripe spores may generally be seen in a row, with as many immature ones below. It is noteworthy that in fully involved leaves from wholly attacked shoots there is no differentiation of the leaf tissue cells into palisade and spongy cells: the former are, however, quite typical in normal leaves (fig. 2, Pl. II).

The *teleutospores* are formed beneath the epidermis, which is gradually lifted and disorganised, laying the spores bare. These beds, when just formed, are seen in transverse sections of leaves to be very slightly elevated above the general epidermis level. The depth of such a bed is about 30μ. When transverse sections of leaves through teleutospore beds are kept in water the spores germinate, throwing out a simple

promycelial tube, measuring 4 to 6μ in diameter, which bears a sporidium 6μ in diameter. The teleutospores are long very narrow cells, very densely packed together side by side (fig. 1, Pl. II); so much so that in section the spores are polygonal. Each spore is about 26μ long and 6 to 8μ broad. The spores are never horizontally divided but are sometimes obliquely divided. Fig. 4, Pl. II represents a surface view of portion of a spore bed. It will be seen how small they are in diameter.

The *spermogonia* are large flat structures, very frequently contiguous to a uredo pustule. They measure from 0·252 to 0·346 m.m. in width, and 0·126 to 0·144 m.m. in depth, and their bases rest upon subepidermal tissue (fig. 2, Pl. II). They appear to have no tuft of paraphyses protruding, at least I saw none in the numerous permanently mounted preparations I made and examined.

Remarks.—This is evidently distinct from *M. Hypericorum* (D. C.) as both the uredo- and the teleutospore beds are large and extremely conspicuous, whilst those of the European species are said to be very inconspicuous and small.

2. Melampsora Leptodermis, nov. sp.

On *Leptodermis lanceolata*, Wall.

Early in August the leaves of this host discover small saffron yellow uredo pustules on the lower surface, with pale yellow spots on the upper surface opposite them. The leaves are generally extensively bespattered with these pustules.

The *uredospores* are given off in chains (fig. 6, Pl. II), and are orange yellow (more yellow than orange), round, or slightly oval, beset with prominent spines. The fresh spores examined in water measure 25 × 20μ. I did not observe their germination: they refused to germinate in water on the several occasions I examined them. There are no paraphyses among the uredospores.

At the same time some bright orange red, more or less waxy looking beds may be seen interspersed among the uredo pustules, which are the *teleutospore beds*. The uredo stage is quickly over, and towards the end of August only teleutospore beds are found. These beds rest on the subepidermal cells. They are formed below the epidermis, which they gradually lift up and disintegrate. In transverse sections through newly formed beds it is seen that they are somewhat elevated above the general epidermis level. Such young beds measure about 30μ in total depth, 18 of which is above the outer surface of the surrounding epidermis. This elevation continues as the bed grows older, until at last its base is on the level of the outer surface of the epidermis.

The *teleutospores* are brilliant orange yellow in colour, and are usually single celled, and somewhat thickened at the free end, and the whole bed is covered externally with a thin hyaline layer (fig. 5, Pl. II). Each spore measures about 13μ in breadth, and 30 to 35μ in length: each usually displays a clear nucleolar space. When a portion of leaf blade containing teleutospore beds is kept in a moist atmosphere the latter are found after some hours covered with minute orange red hairs, just distinguishable with the naked eye. These are the promycelial tubes which each bear a very large oval deeply orange red sporidium, measuring about 27 by 15μ, attached asymetrically to the sterigmata. These sporidia germinate readily in water throwing out a simple germ tube, into which the orange red contents wander. As affected bushes have usually immense numbers of pustules on almost every leaf I thought there might be a perennial mycelium; but an examination of the stem bearing numerous such leaves showed no trace of mycelium.

A very remarkable peculiarity in this fungus is the occurrence of hypertrophies on the leaves and smaller stems, bearing *Puccinia* pustules. It is so extraordinary that one is inclined to believe that it is an accidental association of two parasitic fungi, each perfectly independent; and this view commends itself the more favourably when I note that I never found these *Puccinia* hypertrophies on any other than one particular bush. On this bush, however, I collected many, and a few of them were on leaves bearing immense numbers of *Coleosporium* teleutospores. As the *Puccinia* were so intimately associated with the *Coleosporium* I will note its characters here, leaving the final determination of accidental association, or relationship, to future biological experiment.

I found these *Puccinia* hypertrophies on the 7th August, when the *Coleosporium* is in full growth, on the stem, petiole, and leaf blades. The hypertrophies were studded with black pustules containing *Puccinia* spores. The spores are firmly adherent, and when scraped off appear brownish yellow to the naked eye. By transmitted light they are pale brownish yellow bodies, with thin walls, and very clearly defined nucleolar spaces in each cell. They are clearly, though not deeply, constricted at the septum; sometimes with a slight apical thickening, but oftener not. Externally they are smooth (fig. 7, Pl. II). The fresh spores examined in water measured from 42 to 47μ in total length, and 20 to 24μ in breadth at the septum, which divides the spore into two almost equal halves. The stalks adhering to the scraped off spores are very long, measuring in diameter 5μ at the far end to 10μ at the insertion into the spore. I placed these spores into water with a view to observing their germination: but they do not germinate apparently until after a period of rest.

3. Melampsora Salicis Capreæ, (Pers). ?

On *Salix*, sp.

In April I found this host attacked by a uredo-bearing fungus, but by no means largely. Young shoots were attacked, and in such cases every leaf bore beds. The uredo pustules were extremely numerous on each leaf, and on the lower surface mostly, with only a few on the upper surface. These are round or oval and prominent (hemispherical). The spores are pale yellowish orange, and very deciduous, and each pustule contained club-shaped paraphyses (fig. 8, Pl. I). The spores were very uniform in size and round, measuring 20μ in diameter when examined fresh. The epispore is coarsely tuberculated and the contents granular. I placed these spores in water in a watch glass, but they did not germinate.

After this I lost sight of the fungus until July, when I saw the same host in the same locality much more extensively attacked, probably by the same parasite. Now the leaves were more generally attacked, not as before only leaves on particular shoots. The leaves exhibited patches of discolouration, blackish brown in the centre with a surrounding zone of brownish red, and lastly the whole surrounded by an irregular zone of pale yellow. On the lower surfaces of such patches spore beds were erupted. On the blackish centre there was usually a central pustule, surrounded by a circlet of others; and beyond this circle, and outside the blackish centre, irregularly disposed small yellow pustules. The spore beds everywhere contained the same uredospores, with very large club-shaped paraphyses surrounding the base, and sparsely also among the spores. A uredo bed may often be seen in the middle of teleutospore beds. The uredospores are not given off in chains but are borne singly on stalks (fig. 8, Pl. I). These spores are oval, and beset sparsely with coarse spines. The fresh spores measure 28 × 22μ, on an average. The heads of the paraphyses are smooth.

Again in September I found the leaves bearing teleutospore fructification. The leaves were now speckled irregularly on their lower surfaces with orange red spots, mostly round but sometimes of an irregular shape from the coalescence of pustules. With a field lens a central cushion of spore beds may be seen, about 2 to 3 m.m. in diameter. On the upper leaf surface these invaded areas are dark red and very conspicuous. Individual leaves are often very extensively attacked. The central spore cushion contains uredospores with extremely large capitate paraphyses. The spores are very pale yellow and echinulate, oval to round, 23μ in diameter to 26 × 21μ. The heads of the paraphyses measured 27μ in breadth by 34μ in length. The teleutospores in mounted specimens, after treatment with alcohol, measure from 34 to 54μ in length and 8μ in breadth.

Remarks.—I have thought it best to name this fungus *M. Salicis Capreae;* but further research may show it to be different.

COLEOSPORIUM, Léveillé.

HEMICOLEOSPORIUM, Schröter.

1. Coleosporium Plectranthi, nov. sp.

On *Plectranthus Gerardianus*, Benth.

This host begins to be attacked towards the end of July, and in August is in the uredo stage. The pustules are entirely hypophyllous, and consist of little yellow heaps of the size of an ordinary pin's head. The pustules sometimes exhibit a circinate tendency. The position of pustules above is indicated on the upper leaf surface by yellow areas, irregular in size and contour. Some leaves have very numerous areas of invasion, whilst others have but very few. The *uredospores* are very pale yellow, oval, densely tuberculated, measuring on an average when fresh and in water 24 × 17μ. The epispore is very thick; but I could not detect any germ pores. They are given off in fairly long chains.

Around these uredo pustules, early in August, some indistinct smears of orange red colour may be seen, the commencing teleutospore beds, and these rapidly acquire prominence. At the end of August teleutospore beds are very numerous: they are strictly hypophyllous on the uredo areas of invasion. The beds are bright orange red waxy looking cushions. A uredo pustule is often, though not always, the centre of a concentric arrangement of teleutospore beds. At the end of August I put some uredospores and some sections of leaf blade through teleutospore beds into water. The former did not germinate, probably because they were too old; but the latter produced a few oval sporidia. I was unfortunately unable to make out the exact morphological form of the promycelium; but as far as I could see it was of the nature of a *Coleosporium* one. The teleutospore beds are covered with a well marked hyaline layer, and the top of each spore often presents a globular mass of the same hyaline substance. The spore cells are usually single but sometimes divided into two or three parts. The whole length of a spore is about 24 to 28μ, and in breadth about 12 — 14μ, (fig. 4, Pl. IV).

2. Coleosporium Clematidis, nov. sp.

On *Clematis montana*, Don.

Clematis Buchananiana, D. C.

A *Coleosporium* on *Clematis montana* is not infrequently found about Simla during August to October: it is not, however, common in the

neighbourhood of the station. Deep orange red waxy looking beds are formed on the under surfaces of the leaves, frequently circinating round a central uredo pustule of much paler and more yellow colour. A single leaf may bear numerous such pustules. On the upper surface the position of these beds below is indicated by irregular patches of paling, not of definite outline or shape.

The *uredospores*, given off in chains, are orange red, densely beset with large tubercles, and measuring when fresh 30 × 20μ on an average; but varying a good deal in individual measurements.

The *teleutospore beds*.—In *Clematis montana* the teleutospores are usually divided into four cells by transverse septa (fig. 3, Pl. IV). The average length of each spore is about 50 to 60μ and 12 to 14μ in breadth. A single sporidium is formed by each cell on a long narrow sterigma (fig. 5, Pl. IV). The spore beds are initially formed beneath the epidermis.

A little later (September) a similar parasite may be found on *C. Buchananiana*; but I am not certain that it is of the same species. In the absence of biological data it may be regarded provisionally as the same. The circinate arrangement of teleutospore beds around central uredo pustules is not observed on this host. The uredo pustules are saffron yellow, and scattered irregularly over the lower surface of the leaf.

The *uredospores*, here also given off in chains, are pale yellow, tuberculated, and measure when fresh 27 × 22μ.

The *teleutospore beds* are brick red, and occur here and there amongst the uredo pustules, which are at the time I got specimens (September), much more numerous, the reverse being the case in the former host. These beds form, as above, elevated cushions on the surface, above the level of the epidermis. In transverse sections the free surface is seen to be covered with a thin hyaline layer, about 25μ in depth. In such sections the palisade layer of cells on the opposite side are seen to be undisturbed. The whole depth of the teleutospore beds in fresh sections examined in water was found to be about 0·189 m.m. Each teleutospore in this host is larger than on the former, measuring about 80 to 100μ in length by 14μ in breadth. Moreover the spores on this host are usually not divided, but sometimes into 2 or 3 parts.

3. Coleosporium Campanulae, Pers.

On *Campanula colorata*, Wall.

Even as early as the 6th February (1889), a few days after the snow had melted, I found this host bearing brilliant orange red uredospore pustules. At this time only the young lowermost leaves and their

petioles were thus attacked, the pustules breaking out from both surfaces of the leaf blade. At this time I found that the uredospores germinated freely in water, throwing out a simple long tube (about 200μ in length, and 5μ in diameter), into which the coloured contents of the spore wandered, leaving the walls of the latter colourless. In March this stage is still common, but now the sori are more frequently erupted from the lower surface of the blade, a few pustules occurring on the upper surface, exactly opposite some below. Still only the lower leaves near the ground are attacked. The sori on the lower surface tend to coalesce now. Towards the end of March the uredospores do not germinate so readily in water. The fungus is then missed to general observation until early in July, when a new crop of uredo pustules attracts attention. These are numerously erupted from the upper leaf surface, and now from the upper leaves on the stalks. At the same time such attacked plants usually exhibit some generally paled lower leaves, on the lower surfaces of which waxy orange red elevations may be seen, which are teleutospore beds. The same leaves usually bear a few uredo pustules as well. This stage continues throughout August; but the teleutospore beds increase in numbers whilst the uredo pustules diminish and become very scarce, though never entirely absent. At the end of September a third crop of uredo pustules is produced, now all over the green parts of the plant, ascending to, and involving even the green parts of the flower and young fruit capsules. Shortly after this the host withers and dries up. From July onwards the teleutospore beds are constantly met with.

The *uredospores* of all three crops are alike, both in measurement and in general appearance (fig. 10, Pl. IV). They are given off in chains, are orange red, thick walled, beset with tubercles, and measure on an average 21 × 17μ; but after lying in water for 12 to 24 hours 25 × 18μ. Each spore appears to have three germ pores.

The *teleutospores* are covered by a well marked hyaline layer. The spores are orange red and are divided by transverse septa into 3 to 5 cells (fig. 2, Pl. IV). The average length of each complete spore is 40 to 45μ, and the average breadth 14μ.

Remarks.—I have named this species provisionally *C. Campanulae;* but it should be noted that both the uredo- and teleutospores are smaller in the Simla species; neither are the uredospores so variable in size and shape as they appear to be in the European species.

GYMNOSPORANGIUM, Hedwig f.

1. Gymnosporangium Cunninghamianum, Barclay.

On *Cupressus torulosa*, Don.

And *Pyrus Pashia*, Ham.

For a detailed description of this, the only species of *Gymnosporangium* in this region, I must refer the reader to a paper on its life history in the "Scientific Memoirs by Medical Officers of the Army of India," Part V, 1889.

The aecidial stage I have already described in a former volume of this Journal* under the name *G. clavariaeforme*, as at that time its characters appeared to me to agree most nearly with those of that European species. Since the discovery of its complete life history, however, I have no doubt that it is a distinct species, and I have renamed it as above.

The teleutosporic stage on *Cupressus torulosa* may be described as follows. The teleutospore beds are hemispherical dark brown compact bodies during dry weather, and are formed on the ultimate small branches as well as on twigs of 4 to 5 m.m. in diameter. During moist weather these beds swell up enormously into gelatinous masses, which quickly assume a yellow ochre colour, due to a rapid formation of sporidia. During heavy rain the gelatinous spore masses fall to the ground.

The *teleutospores* are slender spindle shaped yellow bodies on long stalks covered with a substance capable of swelling greatly when moistened. When the spore becomes detached from the stalk after moistening a characteristic disc remains at the place of junction. There is no appreciable constriction at the septum, and the walls are usually uniformly thick, with sometimes a slight thickening at the apex. The spores when scraped off dry beds and examined immediately in water measure 75·6 × 25·2μ. Each cell of the spore has two germ pores near the septum. They germinate very readily in water: a promycelium is formed by each cell, dividing into four parts, each forming a sporidium on stout sterigmata. The sporidia are orange red, oval, measuring from 15 × 9 to 22 × 14μ. The formation of secondary sporidia is not uncommon. Experimental evidence fully confirmed the genetic relationship between these teleutospores and the aecidial form on *Pyrus Pashia*.

* J. A. S. B., Vol. LVI, Pt. II, No. 3, 1887.

CHRYSOMYXA, Unger.

LEPTOCHRYSOMYXA, Schröter.

1. Chrysomyxa Himalense, Barclay.

On *Rhododendron arboreum*, Sm.

A detailed description of this fungus will be found in the "Scientific Memoirs by Medical Officers of the Army of India," Part V. It is an extremely conspicuous parasite, since it gives rise to witches' brooms on the host, and is very abundant. The fructification of the fungus may be seen from early spring to the end of May. This has its seat especially on the petioles and along the midribs a short distance into the leaf blade. When ripe the fruit bodies, which are orange red, clothe the petioles so densely as to hide it completely. Each separate fruit body is club-shaped. The expanded upper part measures on an average 2 m.m. in diameter, and the whole about 1·5 m.m. in length. These fruit bodies are also occasionally found on the main axis of shoots and as isolated groups on the leaf blade. In a moist atmosphere they become pure yellow from rapid sporidial formation. These fruit bodies are found only on the leaves and stems of the previous year's growth; never on the newest. The shoots attacked are dwarfed in growth, and bear smaller leaves than normal. There are no uredospores.

Localised attack of the leaf blade is not common. When it occurs, always on leaves of the previous year's growth, small patches are formed reddish brown above with a cluster of about 25 fruit bodies on the lower surface. The leaf blade at such places is very slightly thickened.

The mycelium in the stem is perennial. It is of the usual characters, contains an abundance of orange red oil globules and forms haustoria.

The fruit body consists of four parts: (*a*), the primary lowermost stalk cells, forming the stalk of the club-shaped fructification: (*b*), a group of large central cells, three to four in each row, usually forking, and forming the main part of the expanded club end of the fruit body: (*c*), secondary stalk cells, branches of the last, which give rise to promycelia: and (*d*), the promycelia proper, measuring about 50μ in length by 10μ in breadth, and dividing into four cells, each of which produces a sporidium at the end of a narrow sterigma. The sporidia are round or oval, orange red, and measure from 9μ in diam. to 12 × 10μ. The sporidia are thrown off forcibly as in the case of *C. Rhododendri* (D. C.).

2. Chrysomyxa Piceae, nov. sp.

On *Picea Morinda*, Link.

I first found this parasite in June at Narkanda (40 miles from Simla) where it is fairly, though by no means very, abundant; but I have since found it fairly common much nearer, namely, at Mashobra, a suburb of Simla. In Simla itself I have never met with it on the comparatively few individuals of the host which are present. At Mashobra I found numerous trees attacked with it in the middle of May, and some very extensively. The upper sides of the needles bore brilliant orange red convex beds, round or oval to oblong. Each needle usually bore several such beds; but varying from 2 or 3 to 16, mostly in a single row. Sometimes, however, there was an imperfect parallel row on the other side of the upper needle surface. I observed that in most trees almost all the beds were on one particular side of the needles, so that they could be much better seen from one side of the tree than from the other. This was probably due to some light effect?

Thus the usual site of eruption is the upper half of the needle surface; but sometimes beds are extruded from the lower side also. In the immediate vicinity of the beds the needles were very slightly paled or yellowed, but very inconspicuously. These fruit bodies occur mostly on the older needles, and by far the most frequently on two-year old needles, and were never present on the youngest just evolved needles. I never found any on the axis. The beds varied from about 0·6 m.m. in diameter to 2·5 or 3 m.m. in length by 0·6 m.m. in breadth. In depth (*i. e.* from the free end to the base on the subhypodermal tissue they usually measured 0·44 m.m.).

The mycelium ramifies among the chlorophyll containing cells between the hypoderma and the endothelial sheath, but appears never to penetrate within the latter. The hyphae are on the whole sparingly distributed, except at the bases of fruit bodies where they are very abundant. They are easily seen in fresh sections as they contain orange red oil globules, and measure 4μ in diameter. The resin canals never contain hyphae; but these are sometimes seen in the air spaces below stomata.

The *fruit body* consists mainly of radiating long oval cells, borne by much septated filaments forming a pseudo-parenchyma. These long cells measure from 0·100 to 0·157 m.m. by 12 to 16μ broad. They may frequently be seen to contain a central well marked nucleus, staining deeply with carmine. These cells are never forked (fig. 1, Pl. IV.) There are a few scattered cells beyond the outer ends of the long cells, on the surface of the fruit body, but they do not appear to

be portions of a promycelium. Unfortunately I have never been able to see any sporidial formation. I have kept needles bearing the fructification in a moist atmosphere, but without seeing any germination. My description of this parasite is therefore very imperfect.

Remarks.—In comparing this fungus with Rees's description of *Chrysomyxa Abietis*, Ung, there appear to be considerable differences, and especially in the large cells forming the main elements of the fruit body. I have examined numerous sections, but have never seen these cells septated, nor forked. It would therefore almost seem that the parasite is more nearly related to *Coleosporium* than to *Chrysomyxa*. The want of observation of the nature of germination unfortunately precludes any decision on this point, and I have included it among *Chrysomyxata* on general rather than on particular analogy. Should future research show that it is in fact a *Chrysomyxa* it would be an interesting example of the very close morphological relationship between this genus and *Coleosporium*.

Among other points of difference may be noticed the larger size of the teleutospore beds in the European species, the smaller number of them on each needle (one to two), their eruption from the *under* surface of the needle, the conspicuous yellow bands of discolouration produced on the needles, the smaller number of teleutospore cells on each fruit body (about 12 against 20 in Simla), and the presence of haustoria.

CAEOMA, Link.

1. Caeoma Smilacis, Barclay.

On *Smilax aspera*, L.

For a detailed description of this parasite I must refer the reader to a paper on its life history in the "Scientific Memoirs by Medical Officers of the Army of India," Part IV. It is apparently a complete autoecious species, but the experimental evidence for this is not complete.*

The *aecidial stage* is found in July on the newly evolved leaves and their petioles. Bright yellow patches are formed on the leaves, more or less irregular in shape, and varying in size from a small point to 2 cm. in diameter. These patches are considerably thickened. When mature such patches bear minute brownish papillae on both surfaces, which are the aecidia. The latter open by a pore, through which the aecidiospores are extruded. These patches also bear spermogonia mostly on the upper leaf surface.

In October, when the aecidial stage is disappearing, the same generation of leaves bear *uredo pustules*, formed by a distinct mycelium.

* Since this paper was read I have completed the evidence.

The lower surfaces of the leaves exhibit a few or a very great many slightly paled circular areas on each of which a minute pustule is formed, containing yellowish brown uredospores. The invaded areas are not in the least thickened. When a leaf is not excessively attacked the uredo pustules frequently exhibit a marked circinate arrangement, two circles around a central pustule.

The *teleutospore stage* consists in the gradual production of *Puccinia* spores in the uredo pustules, which latter then enlarge very greatly. The teleutospore beds are well raised dark brown compact masses. If a leaf bearing teleutospore beds be placed in a moist chamber the beds swell very noticeably, and become light brown in colour. This swelling is due to the swelling of a gelatinous sheath enclosing the stalks of the teleutospores.

The *mycelium* bearing uredo- and teleuto-spores does not contain orange red oil globules, does not form haustoria, and does not give rise to any hypertrophy of the host's tissues. That bearing aecidia contains conspicuous coloured oil globules and gives rise to considerable hypertrophy of the host's tissues; but still does not form haustoria.

The *uredospores* are oval or pyriform, pale yellow, and beset externally with very prominent spines. Among them are a few club-shaped paraphyses. They are formed singly on short stalks. The fresh spores measure on an average 46·5 × 31·7μ. The epispore is thickened at the free end. They do not germinate readily in water, and I have consequently not observed their germination with accuracy.

The *teleutospores* are pale yellow, with long stalks surrounded with a gelatinous sheath. The free end is thickened. They vary in length from 74·0 to 50·8μ: the upper cell varies from 38 × 16 to 25 × 15μ, and the lower from 36 × 16 to 25 × 15μ. The spore is slightly constricted at the septum, and measures about 14μ in breadth. They are firmly adherent. The epispore is smooth. When the stalk is swelled in water the thin central axis is clearly defined as in *Gymnosporangium*. The spores germinate by forming two usual promycelia, but instead of forming sporidia on sterigmata, the four cells of each promycelium separate from one another, and apparently represent sporidia. These detached cells measure from 14 × 8 to 18 × 11μ. I never observed these cells germinating. At the time I wrote the paper referred to above I had never witnessed any variation from this mode of germination. At that time all my cultivations were made in hanging drops of water in a confined atmosphere. Recently, however, I caused the teleutospores to germinate in water in a watch glass, in a large moist atmosphere (as recommended by Plowright), and then the usual sporidial formation took place. The sporidia are oval and orange red and measure from 10μ in diameter to 18 × 8μ.

The *aecidium* is deeply placed and is not bounded by any peridium, but by a layer of convoluted hyphae. The aecidiospores are given off successively from basidia, but ripe spores do not remain attached to one another in rows as usual. As each spore ripens it is cast off, and the spore below, which up to this time remained in a rudimentary condition, then grows rapidly, forming another ripe spore, and so on. The spores are pale yellow, mostly oval, with an epispore of variable thickness, thickened at one end, and beset with large coarse spines, which are deciduous. The fresh spores measure 43·2 × 25·6μ on an average, varying from 36 × 28 to 52 × 16μ. The thickness of the epispore is usually about 4μ, and 6 to 10μ at the thickened end. These spores, like the uredospores, do not germinate readily in water.

The *spermogonia* are plentiful, are deeply set, and a tuft of paraphyses protrude through the mouth. They measure 145μ in depth, and 157 in breadth.

2. Caeoma Mori, nov. sp.

On *Morus alba*, L. var. *θ. serrata.*

This fungus is one of those species situated so nearly between two genera that it is somewhat difficult to decide to which it belongs. On the whole I am inclined to regard it as a species of *Caeoma.*

Curiously enough I only once found it, namely, in November, 1885, and although I have frequently searched for it again I have never succeeded in finding it. Owing to this circumstance my notes of it are very imperfect.

The aecidia are hypophyllous. Although there is no regular coherent peridium the outer aecidiospores resemble peridial cells in being colourless and larger than the aecidiospores proper (fig. 6, Pl. IV), which are reddish yellow, round or oval, and measuring when fresh from 14μ in diameter to 20 × 14μ, but on an average 17 × 14μ. The epispore is thick, measuring 2μ. The outer colourless pseudo-peridial cells measured from 19 × 11 to 22 × 12μ.. I did not observe the germination of the aecidiospores.

ISOLATED UREDO FORMS.

Of isolated Uredo forms six are known to me. Among these two are remarkable, namely, those on *Vitis himalayana* and on *Gomphrena globosa*, the former for forming columnar spore masses, and the latter for producing a curious flocculent mycelium on the surface of water when allowed to germinate there in a moist atmosphere.

1. Uredo Eupatoriae, (D. C.) ?

On *Potentilla* (*Kleinicura*, W. and A. ?)

This host may sometimes be found in July extremely attacked by a uredo bearing fungus. Brilliant orange red or yellow pustules may be found in great numbers on the stem, leaves, petioles, bracts, and even fruit. The spores are brilliantly orange red, irregularly round, beset externally with spines or tubercles, measuring on an average 20μ in diameter when fresh. When placed in water they germinate readily, and normally like uredospores.

2. Uredo Bupleuri, nov. sp.

On *Bupleurum falcatum*, L.

In September this may be found attacked. Numerous minute brown circular pustules are borne on the lower leaf surface, with some irregular discolouration on the opposite or upper leaf surface. The host is at this time in full flower. The spores are brown, round, measuring when fresh 20μ in diameter, with an epispore studded with shallow warts, and with three germ pores usually, but sometimes four. When placed in water they germinate readily in the usual manner of uredospores. Though I have examined pustules up to the time the host dies and is withered up I never saw any other form of spore.

3. Uredo Cronartiiformis, nov. sp.

On *Vitis himalayana*, Brand.

This host is very extensively attacked with a peculiar uredo-like affection, suggestive of *Cronartium*, since the spores are aggregated together into small cylindrical columns, with numerous curved paraphyses at the bases of the columns. The whole, column of spores and paraphyses, are borne on minute papillae on the lower leaf surface. The column of spores is about 1 to 2 m.m. in length, and 0·19 to 0·25 m.m. in diameter.

The parasite is first met with towards the end of July, but continues to increase in abundance until the leaves fall off in autumn (October and November). The pustules are exceedingly small, and are distributed in immense numbers all over the lower surface of the leaf blade. The upper surface of the leaf is studded with reddish brown stains, which makes this otherwise inconspicuous fungus remarkable.

When these columnar heaps of spores are scraped off, which may very easily be done with a light touch, and placed in water, they readily break up into their component elements, and the weight of a cover glass

immediately dissociates the spores. Even when a leaf bearing these columns is first hardened in absolute alcohol the columns do not attain any greater coherency.

The individual spores are obovate or club-shaped, and fairly densely covered with spines. They are pale orange yellow, and measure about 30 × 18 to 27 × 18μ when fresh (fig. 9, Pl. IV).

The earliest formed pustules are yellowish in colour, but later, at the end of August, when the fungus is extremely common, the pustules are brown. The leaves are now old and this may be the sole reason, for the spore columns and spores are identical in size and structure, though the latter are also brownish now. Placed in water the spores of both colours germinate similarly, exactly like uredospores, and very readily, even up to the middle of October.

In August, when the parasite is beginning to appear, I tied some leaves bearing yellow pustules to a plant in my garden which was quite healthy, and in September many of its leaves were studded with similar yellow pustules.

Although I looked carefully and continuously for some teleutosporic form I never found any trace of such.

4. Uredo Apludae, nov. sp.

On *Apluda aristata*, L.

This grass harbours a uredo bearing fungus towards the end of September, but I have never found any teleutospores on it. The uredo pustules are brown, small, oval to linear, very inconspicuous in that it gives rise to no appreciable discolouration in the blade, and entirely hypophyllous. The spores are round to oval, pale brown, thick walled, and measure when fresh 22 × 20μ on an average. Some few are much larger, *viz.*, about 30 × 21μ. The epispore is densely beset with minute tubercles, and has four germ pores. At the end of October I found the same pustules even on drying leaves.

5. Uredo Gomphrenatis, nov. sp.

On *Gomphrena globosa*, L.

Late in October this host is largely attacked in certain localities only. In such places the lower surfaces of the leaves are often densely besprinkled with dark brown, minute, circular pustules, whilst only exceptionally are some found on the upper leaf surface. The upper surfaces of attacked leaves are very slightly paled opposite spore beds on the other side. Spore beds are also formed on the stems and are here linear or oval. The spores are very deciduous, and there are no para-

physes. The uredospores are spiny and yellowish brown, and fall off without any portion of the stalk adhering, although the place of attachment to the stalk is generally very noticeable (fig. 8, Pl. IV). The walls are generally uniformly thick, but in some cases with a very slight apical thickening. The fresh spores examined in water measure on an average 35 × 26·2μ, varying from 32 × 27 to 40 × 24μ. Each spore has two germ spores. When placed in water these spores germinate at once most freely, forming immensely long germ tubes, so long that if numerous spores are floated on water in a watch glass in 24 hours a white silky mould appears to have been formed by them. In germination they are typical uredospores. I never found any teleutospores though I looked carefully for them until the host withered in winter.

6. Uredo Deutziae, nov. sp.

On *Deutzia corymbosa*, Br.

I found this host attacked with a Uredo-bearing fungus in June. The pustules are very pale yellow, hypophyllous, on paled circular areas of the leaf. They are numerous on each leaf. Each pustule, of which there are many on each discoloured patch, is minute and hemispherical. The upper leaf surface is paled opposite the spores below. In general appearance they resemble the Uredo pustules of *Melampsora* or *Coleosporium*. The spores are pale orange yellow, sparsely spiny, round to oval, and measuring 25 – 22 × 21 – 18μ, after lying 24 hours in water.

Remarks.—I found fungus while this paper was passing through the press and I have been unable therefore to illustrate it in the plates. I have not had an opportunity for observing its further development, and must class it meanwhile with isolated Uredo forms. It may possibly be *U. Hydrangeae*, Berk. et Curtis.

ADDENDA.

In the first portion of this list of Uredines* containing a description of the Aecidial forms I noted that I would defer a description of the two forms occurring on *Pinus longifolia* and *P. excelsa*, as my notes of them were at that time incomplete. Descriptions of them now follow. In addition to these I have noted the characters of other two isolated Aecidia.

Since the publication of the second part of this list,† dealing with

* Journal of the Asiatic Society of Bengal, Vol. LVI, Pt. II, No. 3, 1887.

† *Ibid*, Vol. LVIII, Pt. II, No. 2, 1889.

the *Puccinia*, I have discovered six other species, all on the higher *Phanerogamia*, most of them apparently new.

1. Aecidium complanatum, nov. sp.

On *Pinus longifolia*, Roxb.

This *Aecidium*, on the needles of *Pinus longifolia*, is extremely common in Simla, and, indeed, it is rare to find the host free from it. I have once only seen it on the stem (var. *corticola*) and my further remarks refer only to the variety on the needles. The *Aecidium* may be found from autumn to June. A minor crop of aecidia is produced in November on the needles developed in spring, and although numerous in certain localities is not by any means so abundant in general as a second crop which commences in February and which gradually reaches a maximum development in May. The crop commencing in autumn is associated with well marked spermogonia, while that commencing in February is apparently without them.

The needles of the host are annual in this region falling from May to June, that is just before the rains set in. At this time the new needles are emerging from their brown scaly covering, and are about 2 to 3 inches long, and, growing rapidly, entirely replace the needles of the year before in July. (I should here mention that a minor evolution of young shoots and needles occurs in autumn, about November). These newly developed needles bear no sign of attack until the middle of August, when many of them, in favoured localities, may be seen bearing paled areas with spermogonia, which long precede the eruption of peridia. After May the dying needles still adherent may still of course be seen bearing peridia; but these are old, and are either empty or contain only a remnant of aecidiospores. In July, when all the old needles have fallen, there is no vestige of the parasite left.

The *aecidia* are large, flat, prominent bodies, reddish yellow in colour, and borne on paled portions of the needles. Each needle bears from 1 to 8 peridia, mostly on the lower or lateral surface. Their length coincides with the long axis of the needle and is very various. The peridia are usually about 1/5th inch (5 m.m.) in length, but are sometimes as much as 1/2th an inch (12·7 m.m.) in length, and in height from the surface of the needle 1/10th inch (2·5 m.m.).

The *mycelium* is confined to the paled areas of the needle, and does not enter within the endothelial sheath. The hyphae ramify extensively among the parenchymatous cells between the endothelial sheath and the hypodermal cells. They do not appear to do any injury to these parenchymatous cells. There are no haustoria.

The *peridium* is very resistant, and when emptied of the orange red aecidiospores is white. It ruptures along the summit or ridge when ripe to allow the exceedingly numerous aecidiospores to fall out. It consists mainly of two layers of cells (in some parts of three) very firmly adherent to one another, by the interlocking of the prominent spines which cover them externally. The walls of these peridial cells are 4μ thick, and the cells themselves measure when moistened from 28 × 20 to 44 × 29μ, or on an average 38 × 41μ.

The *aecidiospores* are formed in very long rows, those towards the basidia being separated from one another by clearly defined intercalary lamellae. They are oval orange red bodies, with thick epispores, beset with numerous and prominent spines, which doubtless aid in their aerial distribution. The dry spores measure on an average 24·3 × 17·9μ, and when moistened 25·4 × 17·9μ. After lying 24 hours in water they measured 26·4 × 19·6μ on an average. I never succeeded in getting these spores to germinate in cultivations, although I have tried various fluids.

Spermogonia. These are of the usual structure; but are very large and deeply set.

Remarks.—This species must, I think, be considered different from *Aec. Pini* (Willd) Pers., as the aecidia are very different in shape and size. Whilst the species I have described has large *flat* peridia, from 5 m.m. to 1 c.m. in length and 2·5 to 3·5 m.m. in height, those of *A. Pini* are conical or cylindrical and 2 to 2·5 m.m. in height. Moreover, whilst the aecidiospores of the latter are 30 to 34 × 20 to 22μ those of the Simla species are 26—24 × 19—17μ.

2. Aecidium brevius, nov. sp.

On *Pinus excelsa*, Wall.

This is an almost equally abundant *Aecidium*, though less prominent than the above, the peridia being much smaller. It is, I believe, a distinct species. I have only met with it on the needles and never on the stem. It is markedly later in appearing to observation than the former. The aecidia begin to appear early in April, and increase in numbers to June. The needles of this host are not altogether annual, though a great many are shed annually, and those attacked by the parasite are apparently always so shed, as after July no vestige of the aecidia remains. New needles begin to emerge from their scaly coverings towards the end of April, and are full grown in July to August. These new needles are never found attacked.

The *aecidia* are like those of the above species, elongated, flattened, orange red bodies, but much smaller (fig. 2, Pl. III). One of ordinary

size measures $\frac{1}{15}$th inch in length and $\frac{1}{20}$th. to $\frac{1}{30}$th inch in depth. The number of these borne on one needle is usually about four; but varies from one to six, and in exceptional instances even more may be found.

The *mycelium* is confined to the paled portions of the needles and is therefore strictly localised as in the above species. The hyphae ramify among the parenchyma cells between the hypoderma and the endothelial sheath, and does not penetrate within the latter. There are no haustoria.

The *peridium* is very tough and white, consisting of two layers of cells firmly adherent to one another, as in the case of the above species; but the peridial cells are much larger, measuring about $40 \times 22\mu$ or $42 \times 21\mu$ (figs. 6, 7, Pl. III). This difference is so great as to justify me, I think, in regarding it as a distinct species.

The *aecidiospores* are oval and orange red, with a stout epispore beset with prominent spines. The epispore is often thickened more on one side than on the other (fig. 2, Pl. III). They are formed in long serial rows, and in great numbers within each peridium. Between the lower ones intercalary lamellae are present. The dry spores measure on an average $27{\cdot}5 \times 16{\cdot}9\mu$ and when moistened, $27{\cdot}3 \times 19{\cdot}3\mu$. After lying 24 hours in water they measure $30{\cdot}2 \times 21{\cdot}2\mu$ on an average. I have failed to observe the germination of these spores also in cultivations, although I have tried them in various media.

Spermogonia. These are of the usual structure; but are very large and deeply set.

Remarks.—I think the differences between these two *Aecidia* are sufficient to warrant their separation as two distinct species. With a view to ascertaining the exact difference in the size of the aecidospores and the peridial cells of the two species I simultaneously treated both in the same way, and then carefully measured them. The needles bearing aecidia were first placed in a mixture of equal parts of glycerine and alcohol and then examined in pure glycerine. The aecidiospores from *P. longifolia* measured on an average of several individual measurements $22{\cdot}3 \times 15\mu$, whilst those from *P. excelsa* measured $28{\cdot}6 \times 18{\cdot}4\mu$. The differences between the aecidiospores and the peridial cells are shown in the following table:

Host.	Aecidiospores.				Peridial cells.	
	Moistened in water.	Dry.	24 hours in water.	Alcohol and glycerine.	Alcohol and glycerine.	Water.
P. excelsa ...	27·3 × 19·3	27·5 × 16·9	30·2 × 21·2	28·6 × 18·4	40 × 22	129·5 × 91·5
P. longifolia	25·4 × 17·9	24·3 × 17·9	26·4 × 19·6	22·3 × 15·0	27·6 × 17·2	38·0 × 41·3

Cooke, considered both species identical (see *Indian Forester*, Vol. III, 1877-78) and named it *Peridermium orientale*, C. but as I think there is no doubt whatever they are quite distinct I have re-named both species.

In a paper describing a *Chrysomyxa* (*C. Himalense*) which is exceedingly common in Simla on *Rhododendron arboreum*, Sm., I have drawn attention to a possible connection between the *Aecidium* on *P. excelsa* and this *Chrysomyxa*,* and have given reasons why a connection with the *Aecidium* on *P. longifolia* is not probable. The occurrence of a double crop of aecidia on *P. longifolia*, of which I did not know when I wrote the paper referred to above, renders it, however, still more difficult to conjecture the life history of this parasite.

N. B.—In order to complete this list I would here draw attention to three other *Aecidia* on other species of the *Coniferae*, namely, two distinct species on the needles of *Picea Morinda* and one on the Deodar. These I had already fully described in this Journal before I commenced a systematic review of all the *Uredineae* of this region. For one of those on *Picea Morinda* (*Abies Smithiana*) described in Vol. LV, Pt. II, No. 1, 1886, I propose to retain the name

3. Aecidium Thomsoni, Berkeley.

although there is some doubt as to the identity of that species with the species in this region; and for the other, described in the same volume, Pt. 2, No. 2, I propose the name

4. Aecidium Piceae, nov. sp.

The species I have described on the Deodar, Volume LV, Pt. II, No. 2, 1886, I now propose naming

5. Aec. Cedri, nov. sp.

6. Aecidium Plectranthi, nov. sp.

On *Plectranthus Coetsa*, Ham.

An inconspicuous and rare *Aecidium* was found first on the 4th July, and then shortly afterwards on a very few bushes in the same locality. The aecidial patches are small, and a single leaf sometimes contained several of them; but usually only one or two. On the upper surface of patches spermogonia could be seen with a field lens, while the under surface bore the peridia. These are short cups open stellately,

* Scientific Memoirs by Medical Officers of the Army of India, Part V, 1889.

and discover brilliant orange red spores. The aecidio-spores are round or oval, beset densely with shallow tubercles or warts, and measure when fresh 25μ in diameter to 26 × 24μ.

7. Aecidium infrequens, nov. sp.

On *Geranium (nipalensis*, Sweet ?)

This is also a very rare *Aecidium*. I have only once found it in July, 1886. The aecidial patches in the only specimen I ever saw were very numerous on the leaves, each division of the five lobed leaf bearing from one to six patches. The patches were about $\frac{8}{30}$ inch in diameter. The peridia were entirely hypophyllous, and burst stellately, showing orange red aecidiospores within. The under surfaces of the leaf patches were yellow, and the upper surfaces greenish yellow. After the aecidiospores have fallen out of the peridia the latter become deep brown, and then look like teleutospore beds.

The aecidiospores are round, or angular when dry, of a pale yellowish colour, and with very thin walls. The spores become detached in rows of three or more. The fresh spores varied in size from 14μ in diameter to 18 × 16μ.

The peridial cells are thickened on one side: when seen flat they are angular in contour, and measure about 20μ in diameter.

a. HEMIPUCCINIA.

1. Puccinia Iridis, (D. C.)

On *Iris florentina*, L.

Or *Iris pallida*, Lam.

This host is very frequently attacked by a uredo bearing fungus, and I have found it abundantly both in spring (March) and in autumn (September, November). The pustules, which are borne on both surfaces of the leaves equally, are linear and brown, flanked by the rent edges of the epidermis. The spores are round or oval, deep brown, deciduous, falling off without any portion of stalk adhering, and measuring when fresh from 26μ in diameter to 30 × 24 or 34 × 20μ. The epispore is spiny or tuberculated. They germinate freely in water after the manner of uredospores. The end of the long germ tube sometimes swells into a head, not, however, separated by a septum (fig. 7, Pl. IV). The spores, whether collected in spring or late autumn from dried leaves, always germinated in the same way. Each spore has three germ pores.

I found the *teleutospores* for the first time at the end of 1889, although I had looked carefully for them in previous years, and then in one locality only. They are therefore rare notwithstanding the

abundant distribution of the uredo form. The dried leaves are covered with black pustules, round to oval, on both sides of the leaf, mostly remaining covered with epidermis, and with the spores firmly adherent. The pustules contained a few uredospores also. The teleutospores are small, much constricted at the septum usually, though the spores vary much in shape, and much thickened at the apex. The fresh spores measured 36 to 44μ in total length, by 14 to 18 in greatest breadth, or 10 to 13 at the septum. The thickening at the apex is 6 to 9μ. The spores did not germinate on being put into water, and I therefore conclude that they require a winter rest.

2. Puccinia argentata, Schulz.?

On *Impatiens amphorata*, Edgw.

In the middle of September I found this host attacked with a brown uredo bearing fungus; but only in certain localities, and I would characterise it as rare. The upper surfaces of attacked leaves display circular paled patches, and the lower surfaces of these patches bear minute circular brown pustules. Later when the leaf is beginning to wither the invaded areas are conspicuous by their green colour against the yellowed general leaf surface, showing again a lichenoid symbiosis between the chlorophyll cells of the leaf blade and the mycelium of the fungus. A single leaf usually bore immense numbers of these, while the petioles also bore some. Towards the end of September, when the host is beginning to disappear for the season, *Puccinia* pustules are developed, though uredo pustules are still more numerous; but gradually the uredo pustules recede.

The *uredospores* are brown oval bodies, spiny on the surface, and often displaying a nucleus or nucleolar space, and thus resembling a *Uromyces* spore (fig. 11, Pl. I). They are very deciduous, falling off without any portion of stalk adhering, though the place of union with the stalk is usually clearly definable. The fresh spores measured 24 × 16μ on an average. These spores germinated readily in water, throwing out a long simple germ tube, the end being often curiously twisted into an intricate loose knot. Some smaller germ tubes produced a swelling at the end, but this was not separated off by any septum.

The *teleutospores* are plump rounded spores, irregular in size and shape, and with little or no constriction at the septum. Most of them display a small conical colourless thickening at the free end; but some are without this (fig. 11, Pl. I). The spores are readily detached from their beds, and little or no portion of the stalk adheres. They are deep brown in colour, and the external surface is very faintly tuberculated over both cells. An averaged sized spore measured when fresh 32μ in

total length, and 18μ at the septum, which divides the spore into equal parts: a nucleus is contained in each cell. The spores do not germinate immediately after ripening.

3. Puccinia nitida, nov. sp.

On *Polygonum amplexicaule*, Don.

I have never found this fungus actually in Simla; but it is fairly common at Mashobra, a suburb about 6 miles from the station. In one locality many plants were abundantly attacked. Leaves usually bore innumerable pustules, some brown and some black, mostly hypophyllous, rarely epiphyllous. The former are uredo and the latter teleutospore pustules.

The *uredospores* are round to oval, light brown, spiny, and 22 × 24μ in diameter when fresh (fig. 10, Pl. I).

The *teleutospores* are plump, rounded, deep brown, and very slightly constricted at the septum. Each cell has a well marked nucleolar space, and the free end is not thickened (fig. 10, Pl. I). The germ pore of the upper cell is clearly visible a little to one side of the summit. The spores are readily detached, with usually no portion of stalk adhering. The epispore over both cells is finely tuberculated. The spores are very variable in size and shape: some of the smaller squatter spores measure 26μ in total length, by 16μ at the septum, and 19μ in greatest breadth. Larger spores measured 38 to 44μ in length, by 18μ at the septum. The spores do not germinate immediately after ripening.

Remarks.—Saccardo notes three species of *Puccinia* on species of *Polygonum*, namely, *P. Polygoni*, Pers, *P. Bistortae*, Strauss, and *P. mammillata*, Schröter. I do not think the Simla species is identical with any of them. At any rate it is not *P. Polygoni*, *Alb et Schwein*, because the uredo sori in Simla are not irregular and not circinate; the teleutospores are not adherent, no portion of stalk remaining on the detached spores; they do not contract towards the stalk; and are not thickened at the apex.

4. Puccinia Fagopyri, nov. sp.

On *Fagopyrum esculentum*, Moench.

At the beginning of October I found some stray plants of this host growing on a weedy bank far from cultivated fields, largely attacked with a fungus bearing black and dark brown teleutospore and uredo pustules, all hypophyllous, with circular paled areas on the upper leaf surface.

The *uredospores* are pale brown echinulate bodies, oval and measuring 23 × 18μ on an average. The spores germinated in water in the usual way (fig. 9, Pl. I). I have occasionally seen a globular expansion at the end of the germ tube, as shown in the figure; but this is never separated off by a septum.

The *teleutospores* are very deciduous, falling off with only a fragment of stalk adhering. They are dark brown and very variable in size and shape, somewhat constricted at the septum, with a smooth surface, and slightly thickened at the apex. A clear nucleolar space is seen in each cell (fig. 9, Pl. I). The fresh spores measured from 25 to 36μ in total length, by 11 to 13μ at the septum. The septum divides the spore into two almost equal halves. The upper cell is often much broader than the lower, and is more or less globular. The apical thickening is about 4μ in depth, the cell wall elsewhere being about 2μ in thickness. The spores do not germinate immediately after ripening.

5. Puccinia Gentianae, (Strauss).

On *Gentiana Kurroo*, Royle.

I found two plants of this host at the end of December largely attacked with a *Puccinia*, on a hill some miles from Simla to the south (near Solon); but have never seen it again. The plants I found were withered. The under surfaces of the leaves bore numerous black circular isolated pustules. On examining the spores from these they were found to consist of teleutospores with a few uredospores. The spores are readily detached from their beds, coming off with a fragment of stalk usually adhering.

The *uredospores* are oval, pale brown bodies, spiny, measuring 26 × 22μ after lying 24 hours in water.

The *teleutospores* are plump and rounded at both ends, and slightly if at all constricted at the septum. The epispore is very finely tuberculated over both cells, and is uniformly thick, with the exception of a very shallow mamillated thickening at the free end. Each cell of the spore exhibits a clear nucleolar space or body. After lying 24 hours in water these spores measured from 38 to 40μ in length by 25 to 26 in breadth. They are very uniform in size. They do not germinate immediately after ripening. Occasionally a single celled teleutospore may be seen.

Remarks.—This is most probably *P. Gentianae* (Strauss) as the characters of both uredo and teleutospore agree; but I have not seen any *Aecidium*. The locality, however, in which I found the fungus is not familiar to me: I have only once visited it in winter.

b. MICROPUCCINIA, Schröter.

6. PUCCINIA LEPTODERMIS, nov. sp.

On *Leptodermis lanceolata*, Wall.

For description see above under *Melampsora Leptodermis*.

7. PUCCINIA WATTIANA, nov. sp.

On *Clematis puberula*, H. f. and T.

This fungus was collected by Dr. George Watt in the Sutlej valley, near Suni, 2,500 ft., in October 1889. The leaves were covered with blackened, more or less circular patches, on the under surfaces of which were numerous dark brown pustules, with a marked circinate arrangement: a few pustules, however, were found also on the upper leaf surface. The blackened areas of discoloration measured 3—4 m.m. in diameter, and each leaf bore numerous such patches, from 5 to 30. Some pustules were also discovered on the petioles and ultimate stems.

The spores are readily detached, coming off with a considerable portion of stalk adhering. They are deep chestnut brown, smooth on the surface, rounded at both ends, with little constriction at the septum, and often presented a small colourless mammilla at the free end, which is not otherwise thickened. Spores were often seen divided into 3 and even 4 cells, and a few were single celled. There were no uredospores. The spores measured, when just moistened 42 — 37 × 21 — 20 μ.

The spores, which had been preserved *in situ* in ordinary botanical drying paper, were placed in water on the 4th May 1890, and on the following day they were found to have germinated freely. The promycelia are usually quite short, though sometimes long, and are colourless. It is remarkable that whilst the upper promycelium issues from the apex as usual, the lower one is emitted from a point close to the stalk. The sporidia are oval and colourless, measuring 15 — 14 × 8 — 7μ, and are borne on short sterigmata. No secondary sporidia were formed.

Remarks.—Saccardo mentions 2 species of *Puccinia* on species of *Clematis*, *viz.*, *P. stromatica*, Berk. et Curtis, and *P. insidiosa*, Berk. In the absence of measurements it is impossible to determine whether the species I have described is identical with either. The general characters of the spores of *P. insidiosa* are unlike those I have described. The spores of *P. stromatica* are somewhat similar; but the sori are said to be diffuse and ruddy. I am inclined to think that the species I have described is distinct, and I have named it after Dr. G. Watt. I regret being unable to give figures of the spores, as I obtained the specimens after this paper had been sent to press.

N. B.—Since the publication of Part II of this List I have been able to follow the complete life history of the *Puccinia* there described under the name *P. helvetica*, Schröter, and there is no doubt that it is a new species. Aecidial fructification is entirely suppressed. I have given a full description of it under the name *Puccinia Collettiana* in the Scientific Memoirs by Medical Officers of the Army of India, Part V, 1889.

DESCRIPTION OF THE PLATES.

Plate III.

Fig. 1. *Uromyces Vossiae*, uredospore. 2, ditto, teleutospore. 3. *Phragmidium subcorticium*, teleutospore, × 220. 3. a, ditto, aecidiospore. 4. *Phragmidium Rubi*, teleutospore. 5. ditto, germinating, with sporidial formation. 6. ditto, uredospores. 7 *Melampsora Salicis Capreae*, transverse section through teleutospore bed, × 220. 8. ditto, through uredo bed, × 220. 9. *Puccinia Fagopyri*, teleutospore, and germinating uredospore. 10. *Puccinia nitida*, three teleutospores and uredospore. 11. *Puccinia argentata*, two teleutospores and uredospore.

Plate IV.

Fig. 1. *Melampsora Sancti-Johannis*, transverse section through teleutospore bed, × 150. 2. ditto, transverse section though leaf bearing uredo bed and spermogonia, × 220. 3. ditto, natural appearance of wholly involved very young shoot. 4, ditto, surface view of teleutospore bed. 5. *Melampsora Leptodermis*, transverse section though young teleutospore bed, × 220. 6. ditto, though uredo bed, × 220. 7. *Puccinia Leptodermis*.

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Fig. 1. *Aecidium complanatum*, natural appearance. 2. *Aec. brevius*, natural appearance. 3. *A. complanatum*, transverse section though peridium. 4. ditto, peridial cells seen flat. 5. ditto, lowermost cells of row of aecidiospores, showing intercalary lamellae. 6. *A. brevius*, peridial cells seen flat. 7. ditto, transverse section though peridium. 8. *A. complanatum*, aecidiospores. 9. *Aec. brevius*, aecidiospores.

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Fig. 1. *Chrysomyxa Piceae*, transverse section though fruit body, × 150. 2. *Coleosporium Campanulae*, transverse section though teleutospore bed, × 220. 3. *Coleosporium Clematidis*, transverse section through teleutospore bed on leaf of *C. montana*, × 220. 4. *Coleoporium Plectranthi*, transverse section through teleutospore bed, × 220. 5. *Col. Clematidis*, promycelium with sporidial formation (*C. montana*). 6. *Caeoma Mori*, sterile and fertile aecidospores. 7. *Puccinia Iridis*, germinating uredospore. 8. *Uredo Gomphrenatis*, uredospore. 9. *Uredo cronartiiformis*, uredospore. 10. *Coleosporium Campanulae*, uredospore.

N. B.—Unless otherwise specified all figures are × 350.

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VIII.—*Materials for a Flora of the Malayan Peninsula.*—*By* George King, M. B., LL. D., F. R. S., C. I. E., *Superintendent of the Royal Botanic Garden, Calcutta.*

(*Continued from* p. 408 *of Vol. LVIII of* 1889.)

[Received and read 5th February, 1890.]

Order IX. BIXINEÆ.

Trees or shrubs with alternate minutely stipulate or exstipulate leaves. *Flowers* regular, 1-2-sexual. *Sepals* 4 or 5 (rarely 2 to 6) imbricate, free, or connate and bursting irregularly, usually deciduous. *Petals* 4 or 5, or absent, imbricate or contorted, deciduous, often with basal scales. *Stamens* hypogynous or sub-perigynous, (united into a column in *Ryparosa*) : anthers 2-celled with porous or longitudinal dehiscence. *Disc* thick, often glandular. *Ovary* free, usually 1-celled, the placentas parietal. *Styles* and *stigmas* free or united. *Fruit* dry with valvular dehiscence, the seeds along the middle of the valves ; or fleshy, indehiscent. *Seeds* arillate, albumen fleshy, embryo axile straight or curved: cotyledons foliaceous. Distrib. Chiefly tropical : genera 30 : species about 170.

Tribe I. *Bixineæ*. Petals broad, contorted, without basal scales : anthers elongate, opening by terminal pores or short slits.
  Capsule with parietal placentas, 2-valved, softly muricate ... ... 1. *Bixa.*

Tribe II. *Flacourtiæ*. Petals small and imbricate, or absent. Anthers short, opening by slits.
  Flowers hermaphrodite : petals 4 to 6.
    Stamens numerous ... ... 2. *Scolopia.*
    „ 5 or 6 ... ... 3. *Erythrospermum.*
  Flowers dicœcious : petals 0.
    Ovary 2 to-8 celled ... ... 4. *Flacourtia.*

Tribe III. *Pangiæ*. Flowers dicœcious, petals with an adnate basal scale or appendage : fruit large, indehiscent.
  Sepals free.
    Sepals 5, imbricate ; Petals 5. Stamens 5 to 8 : Stigmas 3 to 6 ... ... 5. *Hydnocarpus.*
    Sepals 4. Petals 8, in 2 rows ; Stamens 20 to 30, Stigma 1 ... ... 6. *Taraktogonos.*

Sepals combined into a cup, its mouth entire at first, but irregularly toothed on expansion.
Flowers large: stamens numerous, free 7. *Pangium.*
Flowers small: stamens united in a column bearing 5 anthers ... 8. *Ryparosa.*

1. Bixa, Linn.

A tree. *Leaves* simple; stipules minute. *Flowers* in terminal panicles, 2-sexual. *Sepals* 5, imbricate, deciduous. *Petals* 5, contorted in bud. *Anthers* opening by 2 terminal pores. *Ovary* 1-celled; style slender, curved, stigma notched; ovules many, on 2 parietal placentas. *Capsule* loculicidally 2-valved, placentas on the valves. *Seeds* many, funicle thick, testa pulpy; albumen fleshy; embryo large, cotyledons flat.

1. B. Orellana, Linn. A small tree. *Leaves* cordate, acuminate, glabrous; length 5 to 7 in., breadth 3 to 5 in., petiole 1·5 to 2·5. *Flowers* in short terminal branched cymes, 2 in. in diam., purple or white. *Capsule* compressed-ovoid, softly prickly, 1·5 in. long; *seeds* covered with coloured pulp. Bl. Bijdr. 55. Roxb. Fl. Ind. II, 31. Miq. Fl. Ind. Bat. I, Pt. 2, p. 107. Hook. fil. Fl. Br. Ind. I, 190.

Cultivated widely in the tropics on account of the dye (Arnatto) yielded by the testa of its seeds.

2. Scolopia, Schreber.

Trees, spinous in India, spines often compound. *Leaves* alternate, entire; stipules minute or 0. *Flowers* small, racemed, axillary, 2-sexual. *Sepals* 4-6, slightly imbricate in bud. *Petals* 4-6, subsimilar, imbricate in bud. *Stamens* many with a row of glands outside them; anthers ovoid, opening by slits, connective produced into a terminal appendage. *Ovary* 1-celled; style erect, stigma entire or lobed; ovules few, on 3 or 4 parietal placentas. *Berry* 2-4-seeded. *Seeds* with long funicles, testa hard; cotyledons foliaceous.—Distrib. Species about 15; Australian, Asiatic, and African.

S. rhinanthera, Clos. in Ann. Sc. Nat. Ser. IV, Vol. 8, p. 252. A tree; young branches puberulous. *Leaves* sub-coriaceous, ovate-lanceolate to lanceolate, shortly acuminate, obscurely and minutely glandular-toothed, the base usually rounded, glabrous, shining; nerves about 7 pairs, faint; length 3·5 to 5 in.; breadth 1·75 in. to 2·5; petiole biglandular at the apex, ·35 long. *Racemes* axillary and terminal, pubescent, bracteolate, 3-4 in., long. *Flowers* on tomentose bracteolate pedicels. *Sepals* 4, ovate-lanceolate, tomentose externally. *Petals* 4, larger than the sepals, rotund,

tomentose on edges and along midrib. *Stamens* indefinite, connective glabrous. *Ovary* cylindric. *Stigma* hemispheric. *Fruit* pisiform, 2-6 seeded. Hook fil. Fl. Br. Ind. I, 190; Miquel Fl. Ind. Bat. I, pt. 2, 107. *Phoberos rhinanthera*, Benn. Pl. Jav. Rar. 187, t. 39. *P. macrophylla*, W. & A. Prodr 30. *Flacourtia inermis*, Wall. Cat. 6673 G, H, only.

Malacca, Griffith; Penang, Curtis. Distrib. Java, Borneo.

2. S. ROXBURGHII, Clos. in Ann. Sc. Nat. Ser. IV, Vol. 8, 250. A glabrous shrub or small tree with spiny stem. *Leaves* sub-coriaceous, shining above, ovate, ovate-lanceolate to oblong-lanceolate, shortly acuminate, sub-entire or faintly and remotely crenate; the base rounded or slightly narrowed, 3 to 5-nerved; lateral nerves about 3 pairs, bold; length 4·5 to 6·5 in., breadth 1·75 to 3·5 in.; petiole biglandular at the apex, ·35 in. long. *Racemes* pubescent, axillary, about 1 in. long, 2-6-flowered, bracteolate. *Flowers* on tomentose pedicels. *Sepals and petals* 5 or 6 each, densely tomentose externally, broadly ovate. *Stamens* indefinite, the connective ciliate. *Ovary* ovate: *style* cylindic: *stigma* 3-lobed. *Fruit* baccate, the size of an olive. *Seeds* few. Hook. fil. Fl. Br. Ind. I, 190: Miq. Fl. Ind. Bat. I, pt. 2, 107. *Phoberos Roxburghii*, Benn. Pl. Jav. Rar. 192. *Ludia spinosa*, Roxb Fl. Ind. ii. 507. *Flacourtia stigmarota*, Wall. Cat. 6678, in part.

Penang, Curtis; Perak, King's Collector. Distrib. Burmah, Sumatra.

3. S. CRENATA, Clos. in Ann. Sc. Nat., Ser. IV, Vol. 8, 250. A tree, glabrous except the inflorescence. *Leaves* coriaceous, shining above, ovate to oblong-lanceolate, obtusely or sharply acuminate, obscurely glandular-crenate; the base narrowed, rarely rounded, obscurely 3-5 nerved; lateral nerves about 5 pairs, faint; length 2 to 5 in., breadth 1 to 1·75 in., petiole ·25 to ·35 in. *Racemes* axillary or terminal, pubescent or tomentose, bracteolate, 1 to 3 in. long. *Flowers* pedicelled. *Sepals* and *petals* 4, rarely 5 or 6, the former tomentose and smaller than the petals. Connective of anthers glabrous. *Ovary* globular, smooth. *Style* cylindric. *Stigma* discoid. *Fruit* globose, about ·75 in. in diam. Hook fil. Fl. Br. Ind. I, 191. Miq. Fl. Ind. Bat. I pt. 2, p. 167. *S. pseudo-crenata*, *acuminata*, *chinensis*, *lanceolata*, and *crasssipes*, Clos. l. c. *S. sœva*, Hance in Ann. Sc. Nat. Ser. 4, xviii, 182. *Phoberos crenatus*, W. & A. Prodr. 29; Dalz. & Gibs. Bomb. Fl. 11. *P. lanceolatus* and *P. Wightianus*, W. and A. Prodr. 30. *P. acuminatus*, *Hookerianus*, and *Arnottianus*, Thwaites Enum. 17 and 400.

Penang, Curtis; Perak, King's Collector. Distrib. Brit. India and Ceylon, China, Philippines.

In the young state this is thorny. It is a very variable species indeed, and too near *S. rhinanthera*.

3. Erythrospermum, Lamarck.

Trees or shrubs. *Leaves* alternate, quite entire. *Flowers* racemed, fascicled or panicled, 2-sexual. *Sepals* 4-6, imbricate in bud. *Petals* 4-6, usually small. *Stamens* 4-6; anthers lanceolate-sagittate, connective dilated. *Ovary* 1-celled; style short, stigma entire or 3-4-fid; ovules many, on 3-4 parietal placentas. *Capsule* coriaceous, 3-4-valved; valves bearing the seeds on the middle. *Seeds* few, testa coriaceous or fleshy; embryo incurved. Distrib. Species about 8, of which 6 are Mascarene, one is from Ceylon, and the following Malayan.

E. Scortechinii, King n. sp. A small glabrous tree, the branchlets lenticellate. *Leaves* thickly membranous, broadly ob-lanceolate, abruptly shortly and bluntly acuminate, faintly crenate-serrate, the base slightly narrowed; nerves 5 to 6 pairs, thin, anastomosing ·25 in. from the margin; length 4 to 6 in., breadth 2 to 2·5 in.; petiole ·5 in.; *Stipules* caducous. *Racemes* two to four in a lax terminal panicle, 3 to 4 in. long in flower, and twice as long in fruit. *Ovary* glabrous, 12—20 ovuled; style glabrous; stigma 3-lobed. *Capsules* on thin pedicels ·5 in. long, globular, smooth, ·35 in., in diam., crowned by the conical style with 3-cleft stigma, 3-valved, 1-seeded. *Seed* sub-globular with red pulp.

Perak. Scortechini.

This species was collected only once by Father Scortechini; and he found no flowers. He describes it as a tree 30 to 40 feet high. No species of the genus has hitherto been described from any Malayan province, Ceylon being the nearest country in which one is indigenous.

4. Flacourtia, Commers.

Trees or shrubs, often spinous. *Leaves* toothed or crenate. *Flowers* small, dicœcious, rarely 2-sexual. *Sepals* 4-5, small, imbricate. *Petals* 0. *Stamens* many; anthers versatile. *Ovary* on a glandular disk; styles 2 or more, stigmas notched or 2-lobed; ovules usually in pairs on each placenta. *Fruit* indehiscent; endocarp hard, with as many cells as seeds. *Seeds* obovoid, testa coriaceous; cotyledons orbicular. Distrib. About 12 species, natives of the Old World, some being cultivated in various tropical countries.

Flacourtia Rukam, Zoll. et. Moritzi Verz. 33. A tree; the young branches puberulous and lenticellate. *Leaves* ovate or ovate-lanceolate, membranous, shortly acuminate, slightly and remotely crenate-serrate, the base narrowed, glabrous except the puberulous petiole and midrib; nerves 7 to 8 pairs; length 4 to 5·5 in., breadth 2 to 2·5 in., petiole ·3 in. *Racemes* three times as long as the petioles, axillary, pubescent, bracteolate,

4 to 8-flowered. *Flowers* dicœceous, pedicelled. *Sepals* 4, reniform, tomentose internally. *Male flower* with a circle of glands outside the numerous stamens; pistil none. *Female flower* with a sub-entire flattish fleshy disc at the base of the globular glabrous ovary: *styles* 6 to 8, distinct to their bases, stout, spreading: *stigmas* discoid with a mesial groove. *Fruit* sub-globular, ·5 to ·75 in. long, its pericarp succulent, when dry 6-8 ridged: Hook. fil. Fl. Br. Ind. I, 192, Clos in Ann. Sc. Nat. Ser. iv. Vol. 8, p. 216., Miq. Fl. Ind. Bat. I, Pt. 2, 104. *F. cataphracta*, Bl. (not of Roxb.) Bijdr. 55, (probably).

Perak. Common at low elevations. Malacca, Griffith. Distrib. Burmah, Sumatra and the Malayan Archipelago generally; Philippines.

This species is badly represented in collections and is not well understood, all published descriptions of it being very brief. Clos diagnoses it by its having 5 sepals; but I do not find that this character holds at all. It approaches *F. inermis*, Roxb. very closely in foliage and fruit. According to Roxburgh, who originally described *F. inermis* from plants from the Moluccas cultivated at Calcutta, its flowers are hermaphrodite; and in that respect they differ from those of the other species of the genus. The only authentic specimens of *F. inermis* which I have seen were cultivated in the Bot. Garden, Calcutta, and these are undoubtedly hermaphrodite. The styles are moreover very short and united, and the 5 stigmas form a radiating star on the apex of the ovary, each stigma being cuneate-emarginate. The stigmas of *F. Rukam* are quite different; inasmuch as they are discoid and the styles are distinct to the very base. Forbes's Sumatra specimens No. 1206[a] appear to belong to *inermis*, and they are the only uncultivated ones which I have seen. The fruit of *Rukam* as well as of *inermis* is eatable, although sour. I have not seen an authentic specimen of *Blume's F. cataphracta;* but I can readily believe that it is *F. Rukam*, which is a common Malayan plant. The plants issued as Wall. Cat. 6673 belong (as regards many of the sheets) in my opinion to this, and not to *F. inermis*, Roxb.

2. Flacourtia Cataphracta, Roxb. in Willd. Sp. Pl. iv. 830; Cor. Pl. iii. t. 222; Fl. Ind. iii. 834. A small tree, often thorny when young. Branchlets glabrous, lenticellate. *Leaves* membranous, oblong or oblong-lanceolate, bluntly acuminate (the older sometimes blunt) obscurely crenate-serrate, narrowed to the base; both surfaces glabrous, shining; the 3-4 pairs of nerves thin, sub-erect; the reticulations minute; length 3 to 4 in., breadth 1·25 in., petiole 3 in. *Flowers* in axillary racemes shorter than the leaves, small, (·15 in. diam.); ovary flask-shaped; stigmas 4-6, capitate. *Fruit* the size of an olive, purple. Hook. fil. Fl. Br. Ind. I, 193, Clos. in Ann. Sc. Nat. Ser. IV, Vol. 8, p. 216 (not of Roth, Blume, or Dalzell). *F. Jangomas*, Gmel. Syst., Miq. Fl. Ind.

Bat. Vol. I, pt. ii, 105. *Stigmarosa Jangomas*, Lour. *Roumea Jangomas*, Spreng. *Spina spinarum*, Rumph. Amb Cap 43, p. 38, xix, t. 1, 2.

In all the provinces. Distrib. British India, China. Often cultivated.

5. Hydnocarpus, Gærtner.

Trees. *Leaves* alternate, serrate or entire; transverse venules numerous; stipules deciduous. *Flowers* solitary, or in irregular axillary few-flowered racemes or fascicles, monœcious or dicœcious. *Sepals* 5, equal or unequal, imbricate in bud. *Petals* 5, with a scale opposite each. Fl. ♂; *Stamens* 5—8; anthers reniform, connective broad. *Ovary* 0 or rudimentary. Fl. ♀; *Stamens* as in the ♂ but without pollen, or reduced to staminodes. *Ovary* 1—celled; stigmas 3—6, sessile or subsessile, spreading, dilated, lobed; ovules many, on 3—6 parietal placentas. *Berry* globose, many-seeded, rind hard. *Seeds* many, imbedded in pulp; testa crustaceous, striate; albumen oily; cotyledons very broad, flat. Distrib. Species about 12, tropical Asiatic.

1. Hydnocarpus castanea, Hf. and Th. Fl. Br. Ind. I, 197. A glabrous tree 50 to 60 feet high. Branches and young shorts brown. *Leaves* coriaceous, narrowly elliptic to oblong, gradually narrowed to the shortly acuminate apex; the base unequal, rounded at one side, contracted at the other; both surfaces shining and pale brown when dry; nerves 4—9 pairs, sub-erect, thin but prominent as are the reticulations; length 7 to 14 in., breadth 2·5 to 4·5 in.; petiole thickened at both ends and bent at the apex, ·75 to 1 in. long. *Flowers* in axillary clusters of 2-6, male and female alike and about equal in number, both on tawny-pubescent pedicels 1·25 in long. *Sepals* obovate, imbricate, shorter than the petals, the exposed parts tomentose. *Petals* ·6 in. long, linear-oblong, the scales linear-obtuse, short. *Stamens* with thick subulate filaments; anthers ovate-cordate; rudimentary ovary small, hispid. *Female flowers* like the male, the stamens barren. *Ovary* ovoid, acuminate, tomentose: stigmas sessile; ovules numerous. *Fruit* on a pedicel 1·25 to 1·54 in. long, globular, 1 in. to 1·5 in. diam., minutely rugose, densely covered with short fulvous tomentum; stigma persistent, hemispheric. *Seeds* large, angular. Kurz F. Flora B. Burmah, I, 77.

Malacca; Perak; common. Distrib. Burmah.

2. Hydnocarpus nana., King n. sp. A shrub or small tree; the branches and young shoots glabrous or (var. *pubescens*) pubescent. *Leaves* subcoriaceous, from ovate-lanceolate to oblong-lanceolate, inequilateral, subfalcate, shortly acuminate, remotely and minutely mucronate-serrulate, narrowed and unequal at the base, shining and glabrous except the midrib and nerves which, on both surfaces, are usually more or less

pubescent; nerves 5 to 8 pairs, spreading or sub-erect, thin but prominent beneath; length 2·5 to 5 in., breadth ·75 to 2·5 in., petiole ·25 to ·35 in.; stipules persistent, linear-lanceolate, pubescent, about as long as the petioles. Male inflorescence small, supra-axillary, 1 to 4-branched, uniparous, tomentose, bracteolate, cymes not much longer than the petioles: flowers ·25 in. in diam. *Sepals* 5, rotund, the 3 external slightly imbricate, pubescent; the 2 inner much imbricate, glabrescent. *Petals* 5, smaller than the sepals, fleshy, with long white silky hairs externally, and each internally with a small oblong scale. *Filaments* short, thick, sericeous, the connective reniform; the anther cells small, remote from each other. Ovary 0. *Female flowers* solitary, supra-axillary, on glabrous pedicels ·5 in. long. *Sepals* and *petals* as in the male: stamens without pollen: ovary ovoid, tomentose; stigmas 3, large, flat, bifid, reflexed. *Fruit* on a pedicel ·5 in. long, solitary, axillary, depressed-globular, minutely rugose, and velvetty tawny-tomentose; about 1 in. in diam., or less; pericarp dry, thin. *Seeds* 3 or 4, plano-convex, 5 in. long.

Penang, Curtis, 854: Perak; King's Collector, Scortechini, Wray.

This varies considerably as to size of leaf and fruit and in the amount of pubescence. In some specimens of the male plant the leaves towards the apices of the branches are much reduced in size. The form which has larger more pubescent leaves may be separated as a variety, and farther acquaintance with it may prove that it is separable as a species.

Var. *pubescens*. Young parts, branchlets, and lower surfaces of adult leaves pubescent.

Perak, at Goping, King's Collector, No. 761.

3. Hydnocarpus Curtisii, King, n. sp. A glabrous shrub or small tree. Young branches slender, pale brown when dry. *Leaves* coriaceous, shining on both surfaces, oblong-lanceolate, rarely ovate, slightly inequilateral, gradually narrowed to the acuminate apex; the base unequally narrowed, rarely rounded; nerves 7 to 11 pairs, thin, spreading; reticulations obscure on the upper surface; length 6 to 12 in., breadth 2·25 to 3 in.; petiole less than ·5 in., thick. *Male flowers* in small, axillary, branched, bracteolate, uniparous cymes not much longer than the petioles, ·75 in., in diam.; pedicels scurfy-tomentose, ·75 in. long. *Sepals* reflexed, ovate, blunt, imbricate, pale, minutely pubescent, shorter than the petals. *Petals* 5, narrowly oblong, blunt, concave at the apex, ·65 in. long, glabrous; the gland nearly as long, linear. *Anthers* much longer than the filaments, cordate at the base. Ovary 0. *Female flowers* on shorter, grooved, pedicels; ovary elongate-ovoid, tawny-tomentose: the stigmas 3, fleshy, bifid, spreading. *Fruit* on a stout pedicel nearly ·5 in. long, globose with long apical papilla, minutely rugose and velvetty, vertically ridged; the stigmas persistent; nearly 1·5 in. long and 1 in. in diam. Seeds few, plano-convex, ·4 in. long.

Penang, Curtis, 800, 1534. Perak; King's Collector, Scortechini.

No specimen that I have seen has female flowers showing anything besides the ovary. Complete female flowers are much wanted.

4. HYDNOCARPUS SCORTECHINII, King n. sp. A tree, all parts except the sepals glabrous. Branchlets pale brown when dry, angular. *Leaves* sub-sessile, coriaceous, shining on both surfaces, slightly inequilateral, elliptic or elliptic-oblong, tapering to the acuminate apex, the edges slightly recurved when dry; the base rounded, slightly unequal; nerves 7-8 pairs, thin, spreading; the reticulations minute and distinct on both surfaces: length 5 to 7 in., breadth 2·5 to 3·5 in., petiole about ·2 in. *Cymes* small, monœcious, axillary or extra-axillary, on the young branches, about three times as long as the petioles, densely bracteolate, 2-3 branched. *Male flowers* on pedicels ·75 in. long. *Sepals* elliptic, blunt, their apices incurved, puberulous. *Petals* smaller than the sepals but of the same shape; the gland nearly as long, linear. *Anthers* narrow, elongate; filaments short, conical. *Ovary* none. *Female flowers* like the males, but on short pedicels and the stamens barren; ovary ovoid below, its upper half cylindric, ridged, pale-coloured, glabrous; stigmas large fleshy, reflexed, shortly bifid. *Fruit* (young) ovoid, minutely rugose, glabrous.

Dinding Islands; Scortechini, Curtis.

This species bears a general resemblance to *H. Curtisii*. But it differs from that species in having broader leaves on shorter petioles, much broader and shorter petals, and a glabrous ovary. Ripe fruit of this is unknown.

5. HYDNOCARPUS CUCURBITINA, King, n. sp. A tree 60 to 80 feet high; very young branches and leaves with minute ferruginous mealy tomentum; otherwise glabrous. *Leaves* thinly coriaceous, slightly inequilateral and contracted at the base on one side, elliptic-oblong, tapering to either end, the apex with a short rather blunt acumen, the edge very slightly recurved when dry; both surfaces, but especially the lower, shining and with the transverse veins and minute reticulations very distinct; main nerves 5 to 6 pairs, sub-erect, thin; length 3·5 to 5 in., breadth 1·5 to 2·25 in., petiole ·25 in. *Cymes* dicœceous, (the female flowers few) axillary, three times as long as the petioles, bracteolate, 3 to 6-branched. *Male flowers* on pedicels ·35 in. long, about ·3 in. in diam. *Sepals* broadly ovate, blunt, pubescent-tomentose externally. *Petals* ovate-rotund, glabrous, thin, each with a fleshy scale with white ciliate edges and nearly as large as itself. *Anthers* ovate-cordate, glabrous; the filaments short, conical; *Ovary* rudimentary, sericeous. *Female flowers* like the males, but on slightly shorter pedicels and with smaller barren stamens. *Ovary* cyclindric, densely sericeous-tomentose: *stigmas* elongate, fleshy,

bifid at the apex, not reflexed when young. *Fruit* narrowly obovoid, cylindric, mamillate at the apex and contracted at the base; minutely rugose, smooth, dark brown when ripe and from 3 to 5 in. long; carpophore and pedicel about ·5 in. each, or more. *Seeds* one or two, obovoid, smooth, about 1 in. long.

Perak, up to elevations of 1,000 feet. Common.

Distinguished from every hitherto described species of this genus by its elongate cucumber-shaped fruit. The scales of the petals are also much larger and broader than is usual in Hydnocarpus.

6. Hydnocarpus Wrayi, King, n. sp. A small sub-glabrous tree. Young branches with pale brown, minutely lenticellate, puberulous bark. *Leaves* sub-coriaceous, elliptic, shortly and abruptly acuminate, the edge slightly recurved when dry; the base rounded, sometimes narrowed and unequal; the reticulations on both surfaces very prominent; upper surface glabrous, shining, minutely pustulate when dry; the lower of a pale brown when dry, glabrous except the pubescent midrib and 8-9 pairs of bold sub-erect nerves; length 8 to 10 in., breadth 3·5 to 5 in.; petiole less than 5 in., stout. *Male flowers* nearly 5 in. in diam., in very minute, axillary, pedicelled, few-flowered cymes. *Sepals* 5, slightly imbricate, rotund, pubescent, larger than the petals. *Petals* 5, of the same shape as the sepals but smaller, each with a fleshy roughly cuneate scale the apex of which is irregularly toothed and ciliate. *Stamens* 15, the filaments glabrous, much thickened at the base; anthers broadly ovate, cordate. *Female flowers* unknown. *Fruit* narrowly ovoid, tapering at both ends, often 3 in. long. and 1·75 in. in diam., minutely fulvous-velvetty; the apical mamilla ·75 in. long with its apex depressed and crowned by the 3 fleshy bifid stigmas; one-celled, several-seeded. *Pedicel* short, stout. *Seeds* embedded in a little pulp, elongate, plano-convex, ·75 in long.

Perak. King's Collector, No. 3800; Wray, No. 2608.

This species has more stamens than are usual in the genus *Hydnocarpus*. In this respect it appears to form a connecting link with *Taraktogenos*: but in shape the anthers do not agree with those of that genus.

6. Taraktogenos, Hassk.

Trees with entire alternate leaves and minute fugaceous stipules. *Flowers* in more or less dense, short, axillary, few-flowered cymes; a few hermaphrodite, but the majority staminiferous only. *Staminiferous flower; sepals* 4, in decussate pairs, much imbricate, rotund, concave: *petals* 8, in two rows, smaller than the sepals, imbricate, each with a gland at its base; glands less than half as large as the petals, fleshy,

cuneate, plano-convex, ridged, the apex often irregularly toothed and with 2 or 3 cylindric pits. *Stamens* 20 to 32, the anthers deeply cordate. *Female flowers* like the males, but the sepals often only 3, the petals 6, and the stamens 16 or 17; *ovary* elongate-ovoid, sulcate, divided above into 4 oblong, divergent, reflexed lobes, each bearing a stigmatic surface internally; 1-celled with 4 multi-ovulate parietal placentas. *Fruit* large, globular or ovoid, with hard fibrous or woody rind, and several large seeds embedded in a scanty pulp. *Seeds* with thick hard testa, copious albumen, and straight central embryo; the cotyledons large, cordate, foliaceous, 3-nerved. Species probably about 8: all Malayan.

Note.—This genus was founded by Hasskarl (Retzia, i. 127) on the plant named *Hydnocarpus heterophyllus* by Blume (Rumphia, iv, 22, t. 178 B., fig. 1, and Mus. Bot. i, 16). Until now that plant has been the only known species. But the following have been discovered by Messrs. Kunstler and Wray in Perak. And from the similarity in externals to *Hydnocarpus*, and from the imperfect nature of the Herbarium materials of the latter, it appears to me extremely probable that several things now referred to *Hydnocarpus* really belong to *Taraktogenos*. In the Calcutta Herbarium, there are imperfect materials of of, at least, 8 undescribed species which belong either to one or other of these two genera.

1. TARAKTOGENOS SCORTECHINII, King, n. sp. A large glabrous tree; young branches with dark-coloured bark. *Leaves* coriaceous, shining, inequilateral, oblong-lanceolate, oblong or elliptic, with a short abrupt rather blunt acumen and slightly waved edges; the base slightly narrowed and unequal, 3-nerved,; the upper surface smooth, the lower rough from the prominent reticulations and 4 to 5 pairs of ascending nerves; length 3·5 to 7 in., breadth 1·5 to 2·75 in.; petiole ·5 to ·75 in. *Cymes* trichotomous, 1 in. in diam., on pedicels as long as the petioles, solitary, axillary, few-branched, uniparous. *Male flowers* ·5 to ·6 in. in diam.; pedicels ·25 to ·35 in. *Petals* densely sericeous externally; the basal scales less than half their length. *Stamens* 20 to 24, filaments hirsute, anthers sagittate. *Female flowers* and fruit unknown.

Perak; Scortechini, No. 833; Wray, 1169.

Var. *gracilipes*, King; petioles longer (·75 to 1 in.) and more slender; leaves smaller, 2·5 to 4 in. long, by 1·25 to 1·5 in. broad.

Perak; Bujong-Malacca; Scortechini, No. 1894.

2. TARAKTOGENOS KUNSTLERI, King, n. sp. A sub-glabrous tree 40 to 60 feet high. Young branches fulvous-puberulous. *Leaves* coriaceous, unequal-sided, oblong-lanceolate to elliptic, shortly acuminate; the base narrowed and unequal, 3-nerved; both surfaces shining, the lower rough from

the prominent nerves and reticulations; lateral nerves 3 to 5 pairs on the narrower and 4 to 7 pairs on the wider side, sub-erect, prominent; length 4·5 to 6 in., breadth 1·5 to 3 in.; petiole ·3 to ·5 in., puberulous. *Cymes* dense, many flowered. *Male flowers* as in the last, the scales half as long as the petals, their apices erose, glabrous. *Stamens* 32; the filaments short, subulate, sericeous; anthers elongate, deeply cordate. *Female flowers* like the males, but sepals 3, petals 6, and stamens 17 only. *Ovary* ovoid, glabrous, deeply sulcate, with 4 radiating reflexed oblong stigmas, 1-celled, with 4 multi-ovulate parietal placentas. Fruit solitary, globular, smooth, 2·5 in. in diam.; the pericarp thick, the outer layer fibrous, the inner woody. *Seeds* embedded in scanty pulp, plano-convex, ·75 in. or more in length.

Perak; in dense forest at low elevations; King's Collector, Nos. 6042 and 8183; Wray, 3389.

3. TARAKTOGENOS TOMENTOSA, King, n. sp. A tree 60 to 80 feet high. Young branches fulvous-tomentose. *Leaves* coriaceous, often inequilateral, ovate-oblong, abruptly and very shortly acuminate, the base rounded and slightly unequal; the reticulations prominent on both surfaces, upper surface smooth, shining; the lower fulvous-tomentose; lateral nerves 6 to 7 pairs, bold, sub-erect; length 5 to 7 in., breadth 2·5 to 3 in.; petiole ·25 to ·5 in., tomentose. *Cymes* woody, dense, short. *Fruit* ovoid, smooth; when ripe 3 in. long; the pericarp nearly ·5 in. thick, the outer layer fibrous, the inner thin and woody.

Perak; at an elevation of 500 feet; King's Collector, No. 7795.

Flowers of this are unknown. It is readily distinguished from the former two species by its tomentose leaves, but in other respects it much resembles them.

I subjoin a description of the Burmese species referred to *Hydnocarpus heterophyllus* by Kurz.

TARATOGENOS KURZII, King. A tree 40 to 50 feet high. Youngest branches, leaves and inflorescence tawney-pubescent; otherwise glabrous; older branches grey, minutely lenticellate. *Leaves* sub-coriaceous, lanceolate or oblong-lanceolate, rarely elliptic, abruptly and very shortly and bluntly apiculate; the base narrowed and equal-sided; both surfaces shining, the reticulations minute and distinct; main nerves 6 to 7 pairs, sub-erect; length 7 to 10 in., breadth 2 to 3·5 in., petiole ·75 to 1 in., thickened at the apex. *Cymes* axillary or extra-axillary, from the smaller branches, on thick peduncles, nearly as long as the petioles, with many very short branches at their apices, many-flowered. *Male flowers* ·3 in. in diam., on pedicels less than ·5 in. long. *Sepals* 4, imbricate, ovate-rotund, blunt, concave, pubescent externally. *Petals* 8, broadly ovate, blunt, with ciliate edges, each with a flat fleshy pubescent gland with

white ciliate apex. *Stamens* 24; anthers elongate, deeply cordate; the filaments short and with long white hairs. Female flowers unknown. *Fruit* globular, as large as an orange, on a thick peduncle ·25 in. long; the rind minutely granular, tawny-velvetty, the outer layer thick and fibrous, the inner thin. *Seeds* numerous, irregularly oval, embedded in pulp. *Hydnocarpus heterophyllus*, Kurz (not of Blume) F. Flora B. Burmah i. 77. Wall. Cat. (*indeterminatae*) No. 7508.

Burmah; Griffith, (Kew, Dist. 4363), Falconer, Brandis, Kurz, Gallatly. Chittagong; Lister, Schlich. Sylhet, Wall. Cat., 7508.

This is the plant referred to in Hooker's Fl. B. Ind. i. 197 as "too immature for description." Since that remark was written, better material was got from Burmah, on which Kurz described the species in his Forest Flora as *Hydnocarpus heterophylla*, Bl., with Blume's description of which it, however, manifestly disagrees. Kurz had modified the description of the genus *Hydnocarpus* to admit this plant. Female flowers of it I have never seen: but the males agree with those of *Taraktogenos*.

7. Pangium, Reinw.

A tree with entire, rarely 3-lobed, ovate-cordate, acuminate leaves. *Flowers* dicœceous, axillary, solitary, large. *Calyx* globose, sepals 2-3, concave. *Petals* 5-6, each with a large sericeous scale at its base. *Male Fl.*, stamens 20 to 25; anthers ovate, innate; *ovary* 0. *Female Fl.*, staminodes 5 or 6; *ovary* ovoid, 1-celled, with 2 parietal multi-ovulate placentas; *stigma* sessile, obscurely 2-4 lobed. *Fruit* large, ovoid, indehiscent, many-seeded, pulpy. *Seeds* large, ovoid, angled, rugose, with a large elongate hilum, copious oily albumen, and broad foliaceous cotyledons.

P. edule, Reinw. in Syll. Pl. Soc. Ratisb., ii. p. 13. *Leaves* 6 to 8 in. long, by 3·75 to 5·5 in. broad. *Ripe fruit* with crustaceous pericarp, brown with white dots, 9 in. long by 6 in. in diam.; seeds nearly 2 in. long. Miq. Fl. Ind. Bat. I, pt. 2, p. 109. Benn. Pl. Jav. Rar. 205, t. 43. Blume Rumphia iv, 20, t. 178; Mus. Bot. i, p. 14.

Perak; King's Collector. Distrib. Malayan Archipelago.

8. Ryparosa (Ryparia), Blume.

Trees or shrubs with entire, alternate, elongate, petiolate leaves finely reticulate and more or less glaucescent beneath. *Flowers* rather small, dicœcious; the males in long axillary racemes; the females in shorter racemes, solitary, or in pairs. *Calyx* globose in bud, 3 to 5-cleft. *Petals* 5, imbricate, coriaceous; in the female flower each with a large

sericeous scale at its base. *Male flower;* filaments united in a column with 5, ovate, 2-celled, extrorse anthers at its apex. *Female flower; staminodes* 5, alternate with the petals. *Ovary* 1-celled, with 1 to 3, biovulate, parietal placentas. *Stigmas* 2 to 3, sessile, broad, emarginate. *Fruit* baccate with little pulp; the pericarp coriaceous, tomentose. *Seeds* 1 or 2, sub-globular, smooth.

Note.—This genus was first published by Blume in his Bijdragen (p. 600) as *Ryparosa*, and in that work he published only the single species *R. cæsia.* In a footnote to the preface of his *Flora Javae* (p. viii), the same author referred to the genus (apparently by inadvertence) as *Ryparia* instead of *Ryparosa;* and the name *Ryparia* has been adopted by most subsequent authors. Blume regarded the genus as *Euphorbiaceous*, in which view he was followed by Endlicher (Gen. 5836), Hasskarl (Pl. Jav. Rar., p. 267), and Baillon (Etud. Euph., p. 339). Müll. Arg. (in DC. Prod. XV, ii., p. 1260) excluded the genus from *Euphorbiaceae;* and, in their Genera *Plantarum*, the late Mr. Bentham and Sir J. D. Hooker, (G. P. iii., 257), also exclude it; but, having seen no specimens either of it or of *Bergsmia*, they make no suggestion as to the true position of *Ryparosa* or of the relation of *Bergsmia* to it. Kurz (Journ. Bot. for 1873, p. 233, and For. Fl. Burm. I. 76) was the first to refer *Ryparosa* to *Bixineae.* But Kurz made the mistake of describing in the latter work, as "*Ryparia caesia,*" a plant which agrees neither with Blume's description nor with his specimens of *Ryparosa caesia.* The name of Kurz's plant I have therefore altered to *R. Kurzii.* In 1848, Blume published, in Rumphia IV, p. 23, t. 178 C., fig. 2, a new genus called *Bergsmia* which, as Kurz also pointed out (Journ. of Bot. for 1873, p. 233), is nothing more or less than his older *Ryparosa.* Only one species (*B. javanica*) was known to Blume. To this Miquel added (Fl. Ind. Bat. Suppl. 389) two species, namely, *B. Sumatrana* and *B. ? acuminata.* I have seen neither of these; but the cymose inflorescence of *B. Sumatrana* leads me to believe that it must be a *Hydnocarpus*, while the second (*B. ? acuminata*) was referred doubtfully to *Bergsmia* by its author himself. The collections brought, within the past year or two, from Perak by the collectors of the Calcutta garden contain copious suites of specimens of *Ryparosa* and, from an examination of these, I have no doubt that *Ryparosa* belongs to *Bixineae*, and that *Bergsmia* must be reduced to it. Besides the seven species described below, there are in the Calcutta Herbarium imperfect materials belonging to several additional species from Perak, and to some from Sumatra. Wall. Cat. No. 7847 B. (from Penang), and Beccari's No. 702 (from Sumatra), are also clearly species of *Ryparosa.*

1. Ryparosa Kurzii, King. A tree or shrub. Young shoots ad-

pressed ferruginous-pubescent. *Leaves* elliptic to elliptic-oblong, shortly and bluntly acuminate, the base slightly narrowed; upper surface shining, glabrous except the puberulous midrib; lower glaucous, the reticulations distinct; nerves 7-8 pairs, spreading, prominent beneath; length 8 to 12 in., breadth 4 to 5·5 in.; petiole 1·5 in., thickened in its upper fourth, pubescent. *Male racemes* 5 to 10 in. long, ferruginous-tomentose, the petals reflexed: *female racemes* shorter and subglabrous. *Fruit* globose, the size of a cherry, lenticellate, 2-seeded. *R. cæsia*, Kurz F. Fl. Burm., i, 78, not of Bl.

Andamans; Kurz, King's Collector. Nicobars, Kurz.

2. Ryparosa Wrayi, King, n. sp, A tree 60 to 80 feet high, glabrous except the inflorescence. *Leaves* coriaceous, ovate-lanceolate to oblong-lanceolate or elliptic, the apex sub-acute; slightly narrowed to the base; upper surface shining; lower dull yellowish green when dry, the midrib and 4 pairs of sub-erect nerves prominent below as are the transverse veins; length 6 to 10 in., breadth 2·5 to 4·5 in.; petiole 1 to 1·25 in., slightly winged at the apex. *Racemes* solitary or in pairs, axillary or from below the leaves, 6 to 9 in. long, longer in fruit. *Male flowers* pedicelled. *Calyx* with 3 broad ovate teeth, pubescent externally. *Petals* 5, oblong-ovate, pubescent externally, each with a triangular sericeous scale half as long as itself. *Staminal tube* pubescent; anthers 5, ovate, reflexed. *Female flower; sepals* and *petals* as in the male; disc annular with 5 conical staminodes. Ovary rugulose, pubescent, globular, 1-celled. Stigmas 2, sub-bifid, spreading. *Fruit* globular, crowned by the stigmas, rugose, pubescent, ·5 to 75 in., 1-seeded.

Perak; King's Collector, Wray; rather common.

3. Ryparosa Hullettii, King, n. sp. A small nearly glabrous tree. *Leaves* membranous, obovate-elliptic, with a very short abrupt acumen, the base narrowed; both surfaces shining, the midrib and 3-4 pairs of spreading nerves prominent on the lower, as are the reticulations; length 5 to 7 in., breadth 3 in.; petiole 1·5 in., thickened in its upper fourth. *Male racemes* a foot or more long, puberulous. *Male flowers;* calyx membranous, with 3 broadly ovate teeth. *Petals* 5, ovate; scale small, sericeous. *Staminal tube* glabrous; *anthers* 5, ovate, reflexed. Female flower and fruit unknown.

Singapore: on Bukit Timah, R. H. Hullett.

Distinguished from the other species by its thin obovate leaves.

4. Ryparosa Scortechinii, King, n. sp. A slender tree; the branchlets and inflorescence rusty, otherwise glabrous. *Leaves* large, thinly coriaceous, oblong-lanceolate or oblanceolate, shortly and abruptly acuminate, gradually narrowed from the middle to the base; both surfaces glabrous, the upper shining, the lower dull, pale; the midrib and 5 or 6 pairs of

nerves very prominent; length 10 to 15 in., breadth 4 to 6 in.; petiole 2 to 2·5, thickened and bent at the apex. *Racemes* in tufts from tubercles on the stem and large branches, the male 8 to 12 in. long. *Calyx* splitting into 3 ovate segments, tomentose. *Petals* 4, oblong; the gland large, rotund, sericeous. *Female racemes* shorter; sepals and petals as in the male; ovary tomentose, 4-angled; styles 2, discoid. *Fruit* angled when young: when ripe transversely oblong, 1·5 in., by 1 in., velvetty rusty-tomentose with green or white dots; seeds two, plano-convex.

Perak: Scortechini, Kunstler, Wray; common.

The male flowers have been found only by Scortechini from whose field notes the above description of them has been taken.

5. Ryparosa Kunstleri, King, n. sp. A glabrous tree, the branchlets smooth. *Leaves* coriaceous, ovate-oblong, obovate-oblong to oblong, shortly and abruptly acuminate, the base narrowed; upper surface shining; lower dull, pale, much reticulate, the midrib and 5-7 pairs of nerves very prominent; length 5 to 8 in., breadth 2·5 to 3·5 in.; petiole 1·25 to 1·75 in., swollen and bent towards the apex. *Racemes* axillary, solitary, rarely 2-3 from an axil, the male 6 to 8 in. long, the female half as long; flowers pedicelled. *Male fl. Calyx* thin, pubescent outside, with 3 ovate broad teeth. *Petals* 5, oblong-lanceolate, pubescent externally, each with a large sericeous gland at its base; *staminal tube* glabrous, the anthers ovate-oblong. *Female flower. Sepals* and *petals* as in the male; annular disc at base of ovary small; staminodes none. *Ovary* ovoid, angled, tomentose, 1-celled, with 4 parietal bi-ovulate placentas; stigmas obovate, radiating. *Fruit* globular, yellowish, velvetty, about 1·5 in. diam.; *seeds* 5 or 6, oblong, compressed, striate, about ·75 in. long.

Perak, at elevations up to 800 feet; common. A tree 40 to 100 feet in height, with shorter and (in proportion) broader leaves than *R. fasciculata*, 4 stigmas and more globular pedicellate fruit.

6. Ryparosa fasciculata, King, n. sp. A glabrous tree 30 to 60 feet high. Young branches lenticellate. *Leaves* thinly coriaceous, narrowly oblong, acuminate, the base narrowed, shining above, pale beneath; midrib, 5 to 7 pairs of lateral nerves, and the bold sub-erect transverse nerves and reticulations very distinct especially beneath; length 9 to 15 in., breadth 2·25 to 3·25 in.; petiole 1 to 1·5 in., grooved, thickened in its upper fourth. *Racemes* in fascicles of 4-7 from tubercles on the large branches and stem. *Petals* rotund, much imbricate and inflexed. *Female* flower with annular disc bearing 5 conical staminodes, the petals with hairy scales at their bases; stigmas 3, large, reniform. *Fruit* sessile, rusty-tomentose, pyriform, the apex mammillate and crowned for some time by the remains of the stigmas, about 6-seeded, 1·5 to 2 in. long.

Perak at elevations up to 800 feet; common.

7. Ryparosa caesia, Bl. Bijdr. 600; *Ryparia*, Fl. Javae (praef. VIII). A small tree, the branchlets and inflorescence ferrugineous-silky. *Leaves* coriaceous, oblong, shortly acuminate, the base slightly narrowed; upper surface shining; lower pale, rather densely adpressed-sericeous; nerves 5 to 6 pairs, ascending; length 6 to 9 in.; breadth 2 to 3 in.; petiole 1·25 in., stout, thickened in its upper fourth. *Racemes* solitary, supra-axillary, the female longer than the leaves. *Male flowers; sepals* and *petals* 4, tomentose, the latter with a small basal hairy scale. *Staminal tube* short, glabrous; *anthers* 4, broadly ovate, reflexed. *Fruit* crowned by the 2 shortly-stalked fleshy radiating reniform emarginate stigmas, globose, ferruginous-tomentose, ·5 to ·7 in. diam. Hassk. Pl. Javan. Rar. 267: Baillon Euphorb. 339. Miq. Fl. Ind. Bat. i. pt. 2, p. 361. DC. Prod. XV, 2 p. 1260. Kurz in Journ. Bot. 1873, p. 233.

Java, Blume. Sumatra; Teysmann, Forbes, at an elevation of 3,500 feet.

Blume describes the lower surfaces of the leaves as "tenuiter strigosis"; but the hairs, although adpressed, are not stiff but silky. This is the only species in which the hairs on the lower surface of the leaves are at all conspicuous. The leaves of the Andaman plant referred to *R. caesia* by Kurz are nearly glabrous beneath.

Order X. PITTOSPOREÆ.

Trees or shrubs. *Leaves* alternate or subverticillate, quite entire (very rarely toothed); exstipulate. *Flowers* usually hermaphrodite, terminal or axillary. *Sepals* 5, imbricate. *Petals* 5, hypogynous, imbricate. *Torus* small. *Stamens* 5, opposite the sepals; anthers versatile. *Ovary* 1-celled, with 2-5 parietal placentas, or 2-5-celled by the projection of the placentas; style simple, stigma terminal 2-5-lobed; ovules many, parietal or axile, anatropous. *Fruit* capsular or indehiscent. *Seeds* usually many, albumen copious; embryo small, radicle next the hilum.—Distrib. Genera 9; species about 90, chiefly Australian.

1. Pittosporum, Banks.

Erect trees or shrubs. *Sepals* free or connate below. *Petals* erect, claws connivent or connate. *Stamens* 5, erect; anthers 2-celled, introrse, bursting by slits. *Ovary* sessile or shortly stalked, incompletely 2-3-celled; ovules 2 or more on each placenta. *Capsule* 1-celled, woody, 2- rarely 3-valved; valves placentiferous in the middle. *Seeds* smooth, imbedded in pulp. Distrib. Species about 50, subtropical Asiatic, Australian, and Oceanic.

PITTOSPORUM FERRUGINEUM, Ait. DC. Prod. I, 346. A tree 40 to 60 feet high. Young branches leaves and inflorescence softly ferruginous-pubescent. *Leaves* membranous, lanceolate or ovate-lanceolate, acute or acuminate at base and apex, the edges minutely undulate; when adult glabrous except the midrib and larger nerves; upper surface shining, the lower dull with the minute reticulations distinct; nerves 7 to 8 pairs, not prominent, spreading; length 2 to 3 in., breadth 1 to 1·5 in.; petiole slender, rusty-tomentose, ·5 in. long. *Flowers*, ·25 in. long, greenish-white, in short terminal corymbs. *Sepals* lanceolate, pubescent. *Petals* linear, the apices reflexed, pubescent, 3-nerved. *Ovary* cylindric, rusty-tomentose; style short, glabrous, excentric; capsule globose, when ripe compressed, rugose, with 6 to 8 black flat seeds. Hook fil. Fl. Br. Ind. i., 199. Putterl. Monogr. Pittosp. 7. Benth. Fl. Austral. i. 112. Bot. Mag. 2075.

At elevations of from 800 to 1500 feet; common. Distrib. Burmah., the Malayan Archipelago, Philippines, Queensland.

There is some variability in leaf in different individuals of this species, some having leaves narrowly lanceolate, others ovate-lanceolate.

ORDER XI. POLYGALEÆ.

Annual or perennial herbs, erect or scandent shrubs, or timber trees. *Leaves* alternate (rarely whorled) or occasionally reduced to scales or 0, simple, quite entire. *Stipules* 0. *Flowers* irregular, 2-sexual, 3-bracteate. *Sepals* 5, unequal, 2 inner often petaloid (*wing sepals*), deciduous or persistent, imbricate in bud. *Petals* 5 or 3, distinct, unequal, the inferior usually keel-shaped. *Stamens* 8 (in *Salomonia* 4-5, in *Trigoniastrum* 5) hypogynous, filaments united into a sheath, more rarely distinct; anthers opening by terminal pores, rarely by slits. *Ovary* free, 1-3-celled; style generally curved, stigma capitate; ovules 1 or more in each cell, anatropous. *Fruit* generally a 2-celled, 2-seeded, loculicidal capsule; or indehiscent and 1-seeded, or (in *Trigoniastrum*) of 3 indehiscent carpels. *Seed* usually strophiolate, albuminous, rarely exalbuminous. Distrib. The whole world except New Zealand, chiefly in warm regions; genera 16; species 450—500.

Herbs or (more rarely) erect shrubs. Capsule loculicidal, 2-celled.
- Stamens 8, united; 2 interior sepals alæform — 1. *Polygala.*
- Stamens 4-5, united; sepals petaloid, nearly equal ... ... — 2. *Salomonia.*

Climbing shrubs.
- Stamens 8, united; fruit 1-celled, indehiscent, samaroid ... ... — 3. *Securidaca.*

Trees or erect shrubs.

Stamens 5, united; fruit of 3 samaroid carpels ... ... 4. *Trigoniastrum.*

Stamens 8, distinct; fruit 1-celled, not winged ... ... 5. *Xanthophyllum.*

1. POLYGALA, Linn.

Herbs or more rarely shrubs. *Leaves* alternate. *Sepals* usually persistent; 2 inner larger, usually petaloid. *Petals* 3, united at the base with the staminal sheath, the inferior keel-shaped and generally crested. *Stamens* 8, filaments united for their lower half into a split sheath; anthers opening by pores. *Ovary* 2-celled, ovules 1 in each cell, pendulous. *Capsule* 2-celled, loculicidal, 2-seeded. *Seeds* almost always strophiolate and albuminous. Distrib. conterminous with the order, except Tasmania. About 250 species.

Sect. I. CHAMÆBUXUS, (Tourn. genus). Shrubs with large handsome flowers. *Calyx* deciduous, the lower sepal large, concave-cucullate. *Keel* crested. *Seeds* with a large strophiole, exalbuminous.

1. POLYGALA VENENOSA, Juss. in Poir. Dict. V. 493. A glabrous shrub 4 to 10 feet high. *Leaves* membranous, lanceolate or oblanceolate to oblong-lanceolate, acuminate, entire, narrowed to the short petiole; primary nerves 7 or 8 pairs, the secondary nerves nearly as prominent, the reticulations open, rather prominent; length 5 to 8 in., breadth 1·5 to 2·5; petiole ·2 in. *Racemes* axillary, pendulous, 1 to 3 in. long, often much elongated in fruit. *Flowers* more than ·5 in. long. *Capsule* reniform, striate, more or less 4-winged, 4 in. in diam. DC. Prod. I, 331. Bl. Bijdr. 59. Miq. Fl. Ind. Bat. I, pt. 2, p. 126. *Chamæbuxus venenosa*, Hassk. Pl. Jav. Rar., 294. Pl. Jungh., I, 126.

Var. *robusta*. Miq. l. c.; Hassk. Pl. Jungh. l. c. Leaves large, elliptic-oblong to oblong.

In all the Provinces at low elevations. Distrib. Malayan Archipelago.

A common shrub with handsome flowers; the inner sepals white with pink veins; the petals white, spotted with pink and the keel pink.

Sect. II. Herbs. *Flowers* small. *Calyx* deciduous after flowering. *Keel* not crested, *Seeds* albuminous.

2. POLYGALA TRIPHYLLA, Ham. in Don Prodr. 200; var. glaucescens Hf. Fl. Br. Ind. I, 199. A glabrous, weak, erect or ascending herb. *Leaves* thinly membranous, lanceolate or ovate-lanceolate, sub-acute, contracted into the petiole; main nerves about 7 pairs, thin; length 1·5 to 2 in., breadth ·75 in., petiole ·5 to ·75 in. *Racemes* axillary, 2 to 4 in. long, (or more) slender. *Flowers* ·1 in. long. *Lateral sepals* petaloid,

as large as the corolla. *Keel* hooded. *Capsule* sub-orbicular, entire, narrowly 2-winged. Wall. Cat. 4182 (species).

Perak. At low elevations.

Sect. III. Herbs, sometimes woody at the base. *Calyx* persistent. *Keel* crested. *Seeds* albuminous.

3. POLYGALA LEPTALEA, DC. Prod. I, 325. A perennial glabrous herb, the root-stock woody. *Stems* erect, rigid, boldly striate, few-leaved. *Leaves* sessile, linear-lanceolate, ·5 to ·75 in. long. *Racemes* 1 to 3 in. long, elongating with age, slender. *Flowers* ·2 to ·25 in. long. *Capsule* ovoid, emarginate at the apex, narrowly winged; Hook. fil. Fl. Br. Ind. I, 202. Benth. Fl Austral. i. 139; Hassk. in Miq. Ann. Mus. i. 173. *P. oligophylla*, DC. l. c. 325; Wall. Cat. 4188. *P. discolor*, Ham. in Don Prodr. 199.

Nicobar Islands. Distrib. British India, Ceylon.

4. POLYGALA BRACHYSTACHYA, Bl. Bijdr. 69. A slender, prostrate or sub-erect herb. Branches puberulous, terete below, angled above, 4 to 6 in. long. *Leaves* with very short petioles, linear-lanceolate, bristle-pointed, glabrous, ·4 in. long, and ·05 in. broad. *Racemes* much longer than the leaves, few-flowered, slender, axillary or extra-axillary; pedicels nearly as long as the flowers. *Flowers* ·15 in. long; lateral sepals obovate-oblong. Keel narrow below; the apex suddenly dilated, 3-lobed. *Capsule* sub-orbicular, the apex emarginate, the edges ciliolate. Hassk. in Miq. Ann. Mus. Lugd. Bat. I, 157; Fl. Ind. Bat. I, pt. ii, p. 125. *P. chinensis*, Linn., var. *brachystachya*.

Malacca, Griffith. Distrib. Java, Sumatra.

5. POLYGALA TELEPHIOIDES, Willd. Sp. Pl. iii, 876. A prostrate annual with a woody root. *Stems* 2-4 in. long, pubescent or glabrous. *Leaves* glabrous, often imbricate, fleshy, sessile, obovate or oblong, obtuse or acute, the margins recurved, the base slightly narrowed, the midrib prominent; nerves obsolete; length ·5 to ·65 in. *Flowers* ·1 in. long, in short, extra-axillary racemes. *Capsules* ·1 in. long, sub-orbicular, notched at apex, not winged. Hook. fil. Fl. Br. Ind. I, 205. DC. Prod. I, 332; W. & A. Prod. I, 36, *? P. serpyllifolia*, Poir. Dict. V, 499; DC. l. c. 326. *P. buxiformis*, Hassk. in Miq. Mus. Lugd. Bat. I, 161.

Nicobar Islands. Distrib. Peninsular India, Ceylon, Malayan Archipelago, Philippines, China.

2. SALOMONIA, Lour.

Leafy diffuse annuals, or (Sect. *Epirhizanthes*) parasites with leaves reduced to scales. *Flowers* minute, in dense terminal spikes. *Sepals* nearly equal, 2 interior somewhat larger. *Petals* 3, united at the base with the staminal tube; the inferior keel-shaped, galeate, not crested.

Stamens 4-5, filaments united for their lower half into a sheath; anthers opening by pores. *Ovary* 2-celled, each cell with one pendulous ovule. *Capsule* much compressed laterally, 2-celled, loculicidal, margins toothed. *Seeds* albuminous, not or scarcely strophiolate. Distrib. Species about 8, natives of Eastern tropical Asia and tropical Australia.

Sect. I. SALOMONIA, DC. Stems leafy.

1. SALOMONIA CANTONIENSIS, Lour. Fl. Coch. Ch. 14. A diffuse, much-branched, glabrous, annual; stem and branches winged. *Leaves* shortly petiolate, ovate-cordate, 3-nerved, length ·25 to ·4 in. *Spikes* numerous, terminal, dense above but lax below, 1-3 in. long; bracts minute, fugacious. *Flowers* ·05 in. long. *Sepals* linear. *Capsule* flat, reniform, its edges with bold recurved triangular teeth. Seeds black, estrophiolate; Hook. fil. Fl. Br. Ind. I, 206. DC. Prod. I, 334; Benth. Fl. Hongk. 44; Miq. Flor. Ind. Bat. I, pt. ii, 127; Hassk. in Miq. Ann. Mus. Lugd. Bat. 1, 144. *S. subrotunda*, Hassk. l. c. 146.

In all the provinces except Nicobars and Andamans; in swampy places. Distrib. Brit. India, Malayan Archipelago.

2. SALOMONIA OBLONGIFOLIA, DC. Prod. I, 354. An erect, simple or little-branched, glabrous annual, 3-6 in. high: stem and branches very slightly winged. *Leaves* elliptic or ovate-lanceolate, sessile, ·15 to ·4 in. long. *Bracts* linear, often persistent. *Spikes* terminal, 1-3 in. long, naked below. *Flowers* crowded above, ·05 in. long. *Sepals* nearly equal, lanceolate. *Capsule* reniform, teeth pointed, spreading. *Seeds* black, estrophiolate. Hook. fil. Fl. Br. Ind. I, 207; Hassk. in Miq. Ann. Mus. Lugd. Bat. I, 147; Arn. Pug. Ind. IV; Deless. Ic. Sel. III, t. 19. *S. sessiliflora*, Ham. in Don Prodr. 201. *S. obovata*, Wight Ill. i, t. 22 B. *S. canarana, rigida, ? Horneri, ? uncinata* and *? setosa-ciliata*, Hassk. l. c. 147, 148, 149 *? S. stricta*, Sieb. et Zucc. Abh. d. k. Baier. Akad. d. Wiss. IV, 2, 152.

In all the provinces except Nicobars and Andamans, in swampy places. Distrib. Brit. India, Malayan Archipelago.

Sect. II. EPIRHIZANTHES, Blume (genus). Parasitic leaves none, or reduced to scales.

3. SALOMONIA APHYLLA, Griff. in Trans. Linn. Soc. xix, 342. A brownish-purple, erect, little-branching, parasitic herb, 3-6 in. high. *Leaves* reduced to a few distant, brown scales. *Spikes* terminal, dense, 1-3 in. long. *Bracts* minute, persistent. *Flowers* pale brown, ·04 in. long. *Sepals* ovate. *Capsule* transversely ovate, with a single apical tooth. *Seeds* black, strophiolate, Hook. fil. Fl. Br. Ind. I, 207. *S. parasitica*, Griff. Notul. IV, 538. *S. tenella*, Hook. fil. in Trans. Linn. Soc. xxiii. 158. *Epirhizanthes*, Bl. Cat. Hort. Buitenz. and in Flor. Bot. Zeit. 1825, p. 133; Reuter in DC. Prod. XI, p. 44.

Perak; in dense Bamboo Forests. Distrib. Java, Borneo, Tenasserim.

3. Securidaca, Linn.

Shrubs, almost always scandent. *Flowers* in terminal or axillary, usually compound, racemes. *Sepals* deciduous, 2 inner (*wings*) larger and petaloid. *Petals* 3, lateral nearly or quite distinct from the galeate crested keel, superior petals 0. *Stamens* 8, filaments united: anthers 2-celled, dehiscing by oblique pores. *Ovary* 1-celled, 1-ovuled. *Fruit* a 1-celled samara, 1-seeded; wing broad, coriaceous. *Seeds* exalbuminous, estrophiolate. Distrib. Species about 25; most numerous in tropical America, rarer in tropical Africa and Asia.

Securidaca bracteata, Benn. in Hook. fil. Fl. Br. Ind. I, 208. A powerful climber; branches terete, puberulous. *Leaves* elliptic, shortly and bluntly acuminate, the margins revolute when dry, base rounded or slightly narrowed; upper surface shining, lower densely covered with minute pale pubescence; nerves 5-6 pairs. *Flowers* in racemes or panicles; bracts ovate, acuminate, pubescent, deciduous. *Outer sepals* nearly equal, small, ovate, very hairy, ciliate; wings large, rotund, pubescent externally. *Lateral petals* truncate; keel with a recurved, plaited crest. *Ovary* orbicular; style curved. *Stigma* large. *Samara* 3-3½ in., the nucleus smooth, sub-globular, ·4 in. in diam.; the wing obliquely oblanceolate, membranous, with prominent transverse curving arched nerves; the upper edge thickened entire, the lower erose.

Malacca, Maingay; Perak, Wray.

Not having seen any specimen with perfect flowers, I have copied the description of the sepals and petals from Bennet.

4. Trigoniastrum, Miquel.

A shrub or small tree. *Leaves* hoary beneath. *Flowers* in slender terminal panicles. *Sepals* 5, nearly equal, the two outer larger. *Petals* 5, imbricate, unequal, the two lower partially united to form a keel; the odd petal the largest, saccate at the base and with a large hairy gland in its concavity. Stamens 5 or 6, the filaments united into a group between the ovary and the keel. *Ovary* densely hairy, 3-locular; ovules pendulous, solitary in each cell. *Fruit* of 3 samaroid, ultimately almost distinct, carpels. *Seeds* 1 in each carpel, not strophiolate.

Trigoniastrum hypoleucum, Miq. Fl. Ind. Bat. Suppl. I, 395. A slender tree, 30 to 60 feet high; young branches hoary-pubescent; the older with dark brown, lenticellate bark. *Leaves* elliptic-lanceolate, shortly and bluntly acuminate, narrowed to the base; both surfaces shining; the upper glabrous; the lower pale, very minutely scurfy-pubescent,

the reticulations and 6 pairs of nerves bold and prominent; length 4 to 5 in., breadth 1·25 to 1·75 in.; petiole ·2 to ·3 in. *Panicles* axillary and terminal, slender, spreading. *Flowers* ·25 in. in diam.; shortly pedicellate. *Sepals* 5, pubescent, slightly unequal. *Ovary* hairy. *Samaras* 2 in. long; the nucleus 1 in. to 1·25 long, triangular, flat; the wing thinly membranous, pale yellow, oblong, its apex blunt, oblique, venation vertical, the areolae wide. *Isopteris penangiana*, Wall. Cat. 7261.

Penang. Malacca. Perak; common.

The pubescence on the under surfaces of the leaves is so minute that, without a good lens, it is not seen.

5. Xanthophyllum, Roxb.

Trees or shrubs. *Leaves* coriaceous or sub-coriaceous, usually yellowish green. *Sepals* 5, nearly equal. *Petals* 5 or 4, the inferior keeled, not crested. *Stamens* 8, distinct, 2 attached to the base of petals, the others hypogynous. *Ovary* often surrounded by a hypogynous disc, stipitate, 1-celled; style more or less filiform, ovules various in insertion and number. *Fruit* 1-celled, 1-seeded, indehiscent. *Seeds* exalbuminous, estrophiolate. Distrib. Species about 27, mostly Malayan, a few Indian and one in Queensland.

Ovules 4.

Leaves membranous or sub-coriaceous (coriaceous in No. 2) small: flowers less than ·4 in. long.

Fruit not verrucose.

Ovary glabrous, fruit shining ... 1. *Andamanicum.*

Ovary tomentose

Nerves of leaves 3 to 4, young fruit tomentose ... ... 2. *Griffithii.*

Nerves of leaves 4 to 5, fruit tomentose, branches very slender ... 3. *Maingayi.*

Fruit verrucose.

Fruit verrucose only when ripe, glabrous; leaf-nerves 9 to 10 pairs ... 4. *glaucum.*

Fruit verrucose from its youngest state.

Nerves of leaves 4 to 5, ovary villous; fruit glabrous, vertically grooved ... ... 5. *Palembanicum.*

Nerves of leaves 4 to 5; ovary villous, fruit puberulous not vertically grooved ... ... 6. *eurhynchum.*

Nerves of leaves 10 to 13; ovary villous, ripe fruit glabrous not vertically grooved ...	7. *Wrayi.*
Leaves coriaceous, shining on both surfaces; flowers large, ·4 to ·6 in. long, (small in No. 8).	
Leaves 3 to 5 in. long, nerves 5 to 6 pairs	8. *Curtisii.*
„ 4 to 9 in. „ „ 8 to 10 „	9. *Kunstleri.*
„ 9 to 11 in. „ „ 6 to 8 „	10. *Hookerianum.*
„ 9 to 14 in. „ „ 14 to 16 pairs	11. *venosum.*
Ovules 6 to 14.	
Shrubs or trees with glabrous leaves.	
Leaves shining on both surfaces, drying brown. Flowers large, in short racemes.	
Ovary cottony	12. *stipitatum.*
Ovary glabrous.	
Leaves 2 to 2·25 in. long, nerves 3 pairs	13. *Scortechinii.*
„ 2·5 to 4 in., nerves 5 to 6 pairs...	14. *ellipticum.*
„ 4 to 6 in., nerves 5 to 6 pairs...	15. *obscurum.*
Leaves dull white below, not shining, greenish above when dry: flowers large, ovary tomentose	16. *pulchrum.*
Leaves shining on both surfaces, drying yellowish or greenish.	
Leaves not cordate; panicles small, not spreading	17. *affine.*
Leaves minutely cordate at base; panicles large, wide-spreading ...	18. *bullatum.*
Trees with leaves pubescent beneath, and tomentose inflorescence.	
Pubescence sulphureous; ovary glabrous...	19. *sulphuratum.*
„ rufous; ovary tomentose ...	20. *rufum.*
Doubtful species.	
Fruit many-seeded 3 in. in diam.	21. *insigne.*

1. Xanthophyllum Andamanicum, King, n. sp. A tree 20 to 30 feet high, glabrous except the inflorescence, branches dark brown. *Leaves* thinly coriaceous, drying a pale greenish passing into brown, elliptic to elliptic-oblong, rarely sub-obovate, sub-acute, the base cuneate; upper surface smooth, shining; the lower dull, pale, minutely reticulate; main nerves 7 to 8 pairs, rather prominent: length 3 to 4 in., breadth 1·25 to 1·75 in.; petiole ·3 to ·4 in. *Flowers* ·3 in. long, their pedicels about as long. *Panicles* extra-axillary or terminal, 1·5 to 3 in. long, lax, few-branched,

slender. *Sepals* rotund, pubescent, edges ciliolate. *Petals* broadly ovate, glabrous, keel. pubescent. *Filaments* flat and pubescent at the base, otherwise glabrous. *Ovary* ovoid-elongate, glabrous, 4-ovuled; style rather flat, pubescent; disc small, glabrous. *Fruit* globose, ·5 in. in diam., smooth; pericarp thin, crustaceous.

Andaman Islands; Helfer, Kurz, King's Collector. Burmah, Kurz.

This is not unlike *X. Griffithii* in its leaves: but it differs in its glabrous ovary and fruit.

2. XANTHOPHYLLUM GRIFFITHII, Hook. fil. Fl. Br. Ind. I, 210. A tree 40 to 50 feet high; glabrous, except the inflorescence and young fruit. Branchlets robust, dark brown, polished, terete. *Leaves* coriaceous, elliptic-lanceolate or lanceolate, acute or acuminate, the edges slightly revolute, the base acute; upper surface dark (when dry) and shining; the lower pale, sub-glaucous, the minute reticulations and 3-4 pairs of main nerves distinct; length 3 to 5 in., breadth 1 to 1·5 in., petiole thick, dark-coloured, ·35 in. long. *Flowers* about ·35 in. long, in tomentose axillary racemes shorter than the leaves, or in terminal few-branched panicles: pedicels short, stout. *Sepals* broadly ovate, blunt, dark brown, tomentose externally. *Petals* oblong, blunt, glabrous except the pubescent keel. Lower half of *filaments* thickened, hairy. *Ovary* sessile, tomentose, with 4 ovules from its base. *Style* cylindric, sparsely pilose. *Fruit* (young), globular, tawny-tomentose.

Malacca and Perak. Distrib. Burmah (at Mergui). Ripe fruit of this is unknown.

3. XANTHOPHYLLUM MAINGAYI, Hook. fil. in Fl. Br. Ind. I, 210. A tree 20 to 40 feet high. Branches very slender with pale brown bark, the youngest puberulous. *Leaves* membranous, lanceolate or elliptic-lanceolate, cordate-acuminate, the base narrowed; both surfaces smooth, the lower pale but not glaucous; nerves 4-5 pairs, the reticulations fine, not prominent: length 2 to 3 in., breadth ·65 in. to 1 in.; petiole slender, about ·25 in. *Racemes* axillary and terminal, sometimes branched, the rachises tawny-tomentose, 2 to 3 in. long; flowers white, ·35 in. long. *Sepals* rhomboid, unequal, pubescent. *Petals* much longer than the sepals, spreading, glabrous except the pubescent keel. *Filaments* much curved, with a hairy thickening above the base. *Ovary* shortly stipitate, ovoid, ridged, tawny-tomentose; ovules 4, parietal. *Fruit* globose, ·5 in. in diam., minutely tomentose; pericarp moderately thick, puckering when dry.

Penang, Malacca and Perak; at low elevations.

4. XANTHOPHYLLUM GLAUCUM, Wall. Cat. 4199. A tree 20 to 30 feet high. Young branches terete, smooth, pale, the very youngest brown and slightly angled. *Leaves* sub-coriaceous, oblong-lanceolate to

elliptic-lanceolate, sub-acute, the base narrowed into the petiole; upper surface shining; lower dull, sub-glaucous; nerves 8 to 10 pairs, not prominent, reticulations minute; length 3 to 4 in., breadth 1 in. to 1·4 in.; petiole rather thick, less than ·25 in. *Flowers* ·25 in. long, otherwise as in *X. Griffithii*. Fruit globose when quite ripe, slightly warted, and 1 in. in diam. Hook. fil. Fl. Br. Ind. I, 209; Hassk. in. Miq. Ann. Mus. Lugd. Bat. I, 193.

Trang. King's Collector No. 1427. Distrib. Chittagong, Burmah.

This differs from *X. Griffithii* chiefly by having many more nerves in its leaves.

5. XANTHOPHYLLUM PALEMBANICUM, Miq. Ann. Mus. Lugd. Bat. I, 317. A glabrous tree 30 to 40 feet high; branchlets slender, pale. *Leaves* membranous, drying pale green, lanceolate, rarely elliptic, caudate-acuminate, the base narrowed; acute or cuneate; upper surface shining, the lower dull, pale but not glaucous, main nerves 4 to 5 pairs, slightly prominent, reticulations minute; length 3 to 4·5 in., breadth 1·1 to 1·3 in.; petiole ·2 in., slender. Flowers ·4 in. *Racemes* axillary, few-flowered, slender, shorter than the leaves. *Sepals* unequal, rhomboid, spreading, flat, puberulous externally. *Petals* spathulate, glabrous except the pubescent keel. *Filaments* thickened and pubescent in the lower half. *Ovary* shortly stipitate, villous; the annular disc surrounding it small; style sparsely villous. Ovules 4, from near base of ovary. *Fruit* globose, ·75 in. in diam., glabrous, boldly verrucose and with several irregular vertical grooves; pericarp ·1 in. thick, crustaceous.

Perak, rather common. Distrib. Sumatra.

This is not unlike *X. Maingayi*, but is at once distinguished from that by its deeply grooved fruit.

6. XANTHOPHYLLUM EURHYNCHUM, Miq. Ann. Mus. Lugd. Bat. I, 277. A glabrous tree 30 to 50 feet high; branchlets terete, brown. *Leaves* drying pale green, sub-coriaceous, elliptic-lanceolate tapering at both ends, to elliptic with rounded base and apex shortly acuminate; both surfaces smooth, the upper shining, the lower dull slightly paler; main nerves 4 to 5 pairs, prominent beneath; length 4 to 5·5 in., breadth 1·75 to 2·5 in., petiole ·3 in. *Flowers* ·25 in. long, the pedicels not longer than the calyx. *Racemes* shorter than the leaves, pubescent, axillary and solitary or in terminal few-branched panicles. *Sepals* unequal, ovate-oblong, blunt, spreading, minutely tomentose externally. *Petals* spathulate, glabrous except the pubescent keel. *Filaments* slightly flattened and pubescent in the lower half. *Ovary* villous, 4-ovuled. *Style* slightly curved, villous. *Fruit* globose, ·75 in. in diam., puberulous, rather minutely verrucose, not vertically ridged; pericarp crustaceous, brittle, ·2 in. thick.

Perak, Pangkore. Distrib. Sumatra.

This comes very near *X. Palembanicum*, but is distinguished from that species by its more robust branches, longer leaves, and velvetty fruit which is not vertically ridged. The two are, however, closely allied.

7. XANTHOPHYLLUM WRAYI, King, n. sp. A shrub 3 to 8 feet high, the young branches puberulous. *Leaves* sub-coriaceous, drying a pale yellowish green, elliptic to oblong, more or less acuminate, the base rounded or narrowed; upper surface shining; lower slightly dull, pale and rather minutely reticulate; the main nerves 10 to 13 pairs, prominent, forming arches ·2 in. within the edge; length 6 to 10 in., breadth 2·25 to 4·5 in. petiole ·3 to ·6 in. *Flowers* ·35 in. long, their pedicels shorter than the calyx, in terminal or axillary racemes or small panicles less than a third of the length of the leaves. *Sepals* ovate, blunt, puberulous. *Petals* oblong, obtuse, puberulous in the upper, pubescent in the lower, half. *Filaments* flat, pubescent. *Ovary* on a glabrous stalk, densely villous, 4-ovuled, the disc glabrous. *Fruit* globose, ·75 in. in diam.; when young sericeous, when ripe quite glabrous and boldly verrucose.

Penang, Curtis; No. 677. Perak, King's Collector, Wray.

This is not unlike *X. affine*, Korth, but is distinguished from that species by its sericeous ovary and deeply warted fruit. In its fruit this resembles *X. Palembanicum* and *eurynchum;* but it differs from both in its much larger and more numerously veined leaves.

8. XANTHOPHYLLUM CURTISII, King, n. sp. A glabrous tree, 30 to 50 feet high. Young branches rather robust, dark brown, glabrous. *Leaves* coriaceous, drying brown, ovate-lanceolate, shortly acuminate, the base rounded or cuneate; both surfaces smooth, dull; the lower paler, minutely reticulate; main nerves 5 to 6 pairs, not much more prominent than the secondary nerves; length 3 to 5 in., breadth 1 to 1·3 in., petiole ·4 in. *Flowers* ·4 in. long, the pedicels about as long as the calyx. *Panicles* axillary or terminal, few-branched, nearly as long as the leaves. *Sepals* nearly equal, rotund, tomentose. *Petals* oblong, obtuse, glabrous except the broadly obovate pubescent keel. *Filaments* with an ovoid pubescent swelling near the base. *Ovary* sessile, ridged, pubescent, 2 to 4-ovuled, thick walled, surrounded by a fleshy glabrous slightly angled but not wavy disc. *Style* conical, pubescent. *Fruit* (very young) globose, tomentose.

Penang, Curtis; No. 1591 Singapore, Murton.

The leaves of this dry of an olivaceous brown colour.

Ripe fruit is unknown. Curtis' No. 1486 from Penang, of which I have seen no very complete specimen, is probably a variety of this with leaves more attenuated to both base and apex, and with longer more spreading panicles.

9. XANTHOPHYLLUM KUNSTLERI, King, n. sp. A glabrous tree 50 to 80 feet high; the branchlets robust, dark brown, sub-glaucous. *Leaves* large, coriaceous (with a yellowish green tinge when dry) elliptic to elliptic-oblong, the apex very shortly and rather suddenly acuminate, the edges (when dry) undulate, the base rounded or slightly narrowed to the stout petiole; both surfaces shining; nerves sub-horizontal, 8 to 10 pairs, prominent beneath as are the secondary nerves and reticulations; length 4·5 to 9 in., breadth 2·25 to 4·25 in., petiole ·6 to ·75 in. *Flowers* ·6 in. long, shortly pedicellate, in axillary racemes less than half as long as, or in terminal few-branched spreading panicles longer than, the leaves. *Sepals* slightly unequal, ovate-rotund, fleshy, thickened along the midrib, minutely tomentose on both surfaces; the edges thin, ciliolate. *Petals* oblong-obtuse, glabrous except the pubescent keel. *Filaments* with a pubescent ovoid swelling above the base. *Ovary* almost sessile, surrounded by a shallow wavy fleshy disc, ovoid, grooved, tomentose, 4-ovulate: style conical, slightly curved, pubescent. *Fruit* globose, ·65 in. in diam. (young) deciduously tomentose; pericarp thick, spongy, the calyx persistent.

Perak. At low elevations, not common. King's Collector (Kunstler). Penang, Government Hill, Curtis, No. 1590.

10. XANTHOPHYLLUM HOOKERIANUM, King, n. sp. A glabrous large-leaved shrub; young branches rather stout, sub-glaucous. *Leaves* coriaceous, (drying yellowish) elliptic-oblong with a rather abrupt bluntish acumen 1 in. long, the edges slightly revolute when dry, the base slightly narrowed to the petiole; both surfaces smooth, the lower slightly paler; main nerves 6 to 8 pairs, thin but rather prominent beneath as are the reticulations; length 9 to 11 in., breadth 3 to 4 in.; petiole ·75 in. *Flowers* ·4 in. long, the pedicels about as long as the calyx. *Sepals* nearly equal, broadly ovate, minutely tomentose on both surfaces, the edges thin, ciliolate. *Petals* oblong, obtuse, glabrous except the pubescent keel. *Filaments* flat, puberulous. *Ovary* sessile, ovoid, tomentose, 4-ovuled; style flat, grooved, pubescent, slightly curved. *Fruit* unknown.

Perak, King's Collector; No. 5997.

11. XANTHOPHYLLUM VENOSUM, King, n. sp. A glabrous long-leaved tree 20 to 30 feet high; young branches rather robust, with very dark brown bark. *Leaves* (drying pale yellowish-green), coriaceous, oblong, sub-acute, the edges recurved when dry, gradually but slightly narrowed in the lower fourth to the rounded or minutely cordate base; both surfaces shining, the lower slightly paler; main nerves 14 to 16 pairs, horizontal near the base, sub-ascending towards the apex, prominent on the lower surface and forming bold arches ·2 in. from the margin,

secondary nerves and minute reticulations distinct; length 9 to 14 in., breadth 2·5 to 3·25 in., petiole ·75 to 1 in. *Flowers* ·4 in. long, their pedicels longer than the calyx. *Panicles* axillary, few-branched, 3 to 6 in. long. *Sepals* nearly equal, broadly ovate, fleshy with thin edges, puberulous. *Petals* oblong, obtuse, glabrescent, the keel pubescent. *Filaments* flat, puberulous. *Ovary* surrounded by a shallow glabrous wavy disk, ovoid, minutely tomentose, grooved, 4-ovuled; style pubescent, slightly curved. *Fruit* globose with a conical apex, deeply rugose, verrucose; diam., ·35 in. (young).

Perak, King's Collector; Nos. 10614 and 10804.

Ripe fruit of this is unknown. This species, in leaf characters, approaches the Bornean *X. cordatum*, Korth.; but the fruit of that is smooth; of this the fruit is deeply corrugated-rugose as in *X. Palembanicum* and *eurhynchum*.

12. Xanthopyllum stipitatum, A. W. Benn. in Hook. Fl. Br. Ind. I. 210. A tree with slender, smooth, brown branches. *Leaves* subcoriaceous, ovate or elliptic, shortly and obtusely caudate-acuminate; upper surface dull, the nerves obsolete; lower shining, the 3 to 4 pairs of nerves indistinct; length 1·75 to 2·25 in., breadth ·75 to 1 in., petiole ·15 in. *Racemes* slender, axillary, longer than the leaves, pubescent. *Flowers* ·4 in long, shorter than their slender pedicels. *Sepals* subequal, oblong, obtuse, glabrescent. *Petals* twice as long as sepals, spathulate, oblong. Filaments thickened and hairy in their lower half. *Ovary* stipitate, cottony; style sparsely hairy; ovules 8 to 10.

Malacca.

Hitherto known only by specimens from Malacca; fruit not collected.

13. Xanthophyllum Scortechinii, King, n. sp. A tall glabrous tree. *Leaves* thinly coriaceous, drying brown, ovate, obtusely acuminate, the base slightly cuneate, shining on both surfaces; nerves 3 pairs, suberect, not prominent; length 2 to 2·25 in., breadth 1 in., petiole ·35 in. *Flowers* handsome, ·6 in. long, their pedicels ·35 in. *Racemes* axillary, solitary, 2 in. long, few-flowered. *Sepals* fleshy, glabrous with ciliolate edges; the three outer ovate blunt, the two inner rotund. *Petals* broadly obovate, clawed, glabrescent, the keel pubescent. *Filaments* as long as the petals, flat, pubescent; anthers short, ovate. *Ovary* shortly stalked, elongated-ovoid, ridged, glabrous, 6-ovuled; style little curved, glabrous; stigma capitate: disc small, annular, glabrous.

Perak, Father Scortechini, No. 2079.

Of this distinct and handsome species fruit is as yet unknown.

14. Xanthophyllum ellipticum, Korth. in Miq. Ann. Mus. Lugd. Bat. I, 276. A glabrous tree 30 to 60 feet high; branchlets slender,

pale. *Leaves* drying pale brown, sub-coriaceous, elliptic-lanceolate to elliptic, shortly and bluntly acuminate, the base narrowed or rounded; above shining; below dull, the reticulations distinct; nerves 5 or 6 pairs; length 2·5 to 4 in., breadth 1·2 to 1·75 in., petiole ·25 in. *Flowers* ·25 in. long. *Racemes* axillary, shorter than the leaves, the pedicels longer than the flowers. *Sepals* ovate, fleshy, glabrous, concave, unequal. *Petals* thin, spathulate, much longer than sepals, glabrescent. *Ovary* glabrous, shortly stipitate; the stalk surrounded by a shallow entire, undulate, annular disc; 10-ovulate; style glabrous. *Fruit* globular, ·5 to ·75 in. in diam., when ripe smooth, pulpy; pericarp thin, leathery. Hook. fil. Fl. Br. Ind. I, 211.

Malacca, Perak.

15. XANTHOPHYLLUM OBSCURUM, A. W. Benn. in Hook. fil. Fl. Br. Ind. I, 211. A large tree; branches stout, glabrous, lenticellate. *Leaves* coriaceous, elliptic, blunt, narrowed in the lower third to the stout petiole, drying to a dark brown; both surfaces shining; the lower slightly paler; main nerves 5 to 6 pairs, thin, rather prominent as are the intermediate nerves; length 4·25 to 4·75 in., breadth 2 to 2·25 in., petiole ·4 in. *Racemes* axillary, 1 to 1·15 in. long, few-flowered. *Flowers* ·6 in. long, the pedicels short. *Sepals* oblong, blunt, the edges ciliate, the 3 outer small. *Petals* glabrous, oblong, sub-spathulate. *Ovary* ovoid, glabrous, ovules 8 to 10; style glabrous.

Singapore; Maingay, Hullett.

Fruit of this is unknown.

16. XANTHOPHYLLUM PULCHRUM, King, n. sp. A glabrous shrub or small tree, the young branches rather robust, the bark very pale. *Leaves* coriaceous, shortly petiolate, elliptic, acute or very shortly and bluntly acuminate, the edges recurved when dry, base rounded; upper surface shining; lower dull, pale yellow, glaucous, the 5-6 pairs of nerves and the fine reticulations very prominent; length 4 to 8 in., breadth 2·25 to 4 in.; petiole stout, ·2 in. *Flowers* ·6 in. long, on short thick pedicels, in dense, solitary, axillary, rufous-tomentose racemes half as long as the leaves, or less; bracts broadly ovate, concave, deciduous, coloured. *Sepals* nearly equal, ovate-rotund, with fleshy tomentose midribs and thin minutely ciliate edges, coloured. *Petals* oblong, blunt, glabrous except the pubescent keel. *Filaments* rather short, broad, flat, puberulous. *Ovary* ovoid, pointed, tomentose, surrounded by a thin, rather deep, glabrous disc; style glabrescent, slightly curved; ovules 12. *Fruit* globose, ·75 in. in diam., minutely tomentose when ripe, pericarp thin.

Perak: rather common. A handsome bush or treelet with yellowish flowers tinged with pink.

In leaf characters this comes near to the Sumatran *X. vitellinum*, Blume: but the two differ in flower and fruit.

17. XANTHOPHYLLUM AFFINE, Korth. in Miq. Ann. Lugd. Bat. I, 271. A shrub or tree; young branches glabrous, pale brown. *Leaves* thinly coriaceous (drying of a more or less yellowish pale green, especially beneath), elliptic to oblong-lanceolate, shortly and bluntly acuminate, the base cuneate; upper surface smooth, shining, lower dull pale and yellowish; main nerves 5 to 8 pairs, ascending, prominent beneath; length 4 to 7 in., breadth 1·8 to 2·5 in., petiole ·3 to ·4 in. *Flowers* ·35 in. long, the pedicels nearly as long. *Panicles* axillary or terminal, few-branched, minutely tomentose, the axillary half as long, the terminal as long as, the leaves. *Sepals* un-equal, ovate-rotund to rotund, blunt, tomentose externally. *Petals* oblong, obtuse, pubescent near the base or wholly glabrous, the keel always pubescent. *Filaments* flat, puberulous. *Ovary* shortly stipitate, glabrous, from 8 to 14-ovuled. *Style* short, flat, pubescent. *Disc* annular, fleshy, glabrous, often wavy. *Fruit* globose, ·5 to 1·25 in. in diam., smooth; pericarp thin, crustaceous. Hook. fil. Fl. Br. Ind. I, 209.

In all the provinces; common. Distrib. Malayan Archipelago generally. Tenasserim.

This occurs as a bush and also as a tree. It varies a little as to colour and shape of leaves, and as to the pubescence on the petals. But, when its commonness is considererd, its characters are really remarkably constant, that of the size of the individual alone excepted.

18. XANTHOPHYLLUM BULLATUM, King, n. sp. A shrub or small tree with large, sub-sessile leaves; young branches robust, pale, puberulous, lenticellate. *Leaves* coriaceous, drying a pale greenish-yellow, elliptic-oblong, sub-obovate, shortly and bluntly acuminate, the edges sub-recurved; slightly narrowed to the cordate, sub-auriculate, slightly unequal base; bullate, especially in the lower half, shining and glabrous on both surfaces, the lower a little paler; main nerves 18 to 25, bold on lower surface and sometimes puberulous as in the strong midrib; length 11 to 18 in., breadth 4 to 6·5 in.; petiole ·25 in., very stout, glandular. *Flowers* ·4 in. long, the pedicels twice as long as the calyx. *Panicles* terminal, many-branched, spreading, pubescent; bracts deciduous, ovate. *Sepals* unequal, rotund, fleshy, concave, tomentose, the edges of the inner two thin and ciliate. *Petals* ovate-rotund, glabrous, not much larger than the sepals. *Filaments* flat, fleshy, glabrous. *Ovary* glabrous, ovoid, 8-ovuled, surrounded by a glabrous fleshy annular wavy disc; style glabrous; stigma conical, pubescent. *Fruit* globose, glabrous, ·75 in. in diam. (? ripe;) pericarp thick, crustaceous.

Perak, on low Hills.

This resembles *X. adenotus*, Miq., but differs in venation of leaves and in inflorescence.

19. XANTHOPHYLLUM SULPHUREUM, King, n. sp. A tree 100 (or even 150) feet high; branches with very dark brown bark, the youngest minutely tomentose. *Leaves* coriaceous, drying bright yellowish-green, elliptic-oblong, sometimes sub-obovate, acuminate, the edges recurved when dry, the base cuneate; upper surface glabrous, shining; lower sulphureous, softly but minutely pubescent especially on the midrib and 6 to 7 pairs of prominent ascending nerves; length 5·5 to 7·5 in., breadth 2 to 2·5 in., petiole ·5 to ·65 in. *Flowers* ·4 in. long, the pedicels about as long as the calyx. *Panicles* tomentose, with ovate deciduous bracts, compact, many-branched, axillary or terminal, less than half the length of the leaves. *Sepals* unequal, ovate-rotund, minutely tomentose on both surfaces, the edges ciliolate. *Petals* oblong, obtuse, glabrous except the pubescent tips; the keel obovate, vertically 9 to 10-ridged, tomentose. *Filaments* flattened, glabrous. *Ovary* shortly stipitate, glabrous, ovate, 8-ovuled, surrounded at the base by a fleshy glabrous much waved annular disc. *Style* villous in its lower, glabrous in its upper, half. *Fruit* (young) globose, sulphureous, glabrous, faintly rugose.

Perak, on low hills.

Not unlike *X. rufum*, A. W. Benn. in general aspect: but with smaller flowers, glabrous ovary and fruit, and leaves intensely sulphureous beneath.

20. XANTHOPHYLLUM RUFUM, A. W. Benn. in Hook. fil. Fl. Br. Ind. I, 210. A tree 40 to 50 feet high. Branchlets stout, terete, pale scurfy-pubescent, the youngest rufous-tomentose. *Leaves* coriaceous, elliptic to ovate or obovate-elliptic, very shortly and suddenly acuminate, narrowed in the lower third to the stout short petiole, the edges recurved when dry; upper surface glabrous, dull; lower paler, covered with short soft pubescence especially on the midrib and 7-8 pairs of bold semi-erect nerves; length 4·5 to 6·5 in. (acumen ·5 in.,) breadth 2·25 to 2·75 in., petiole ·5 in. *Panicles* terminal or from the axils of the uppermost leaves, lax, few-branched, 3 to 7 in. long, densely tomentose, the ends of the branches and sepals rufous. *Flowers* ·6 in. long, on short pedicels in the axils of ovate sub-persistent bracts. *Sepals* unequal, ovate to subreniform, densely tomentose on both surfaces, fleshy, concave. *Petals* more than twice as long as the sepals, oblong, obtuse, glabrous except the tomentose keel. *Filaments* glabrous, flat at the base. *Ovary* surrounded by a shallow fleshy disc, sessile, ovate, pointed, ridged, tomentose as is also the conical style; ovules 12 to 16. *Fruit* ·75 in. in diam., (? mature) globose, with 4 vertical rufous pubescent ridges; pericarp thick, crustaceous,

Malacca; Perak. Distrib. Sumatra. (Beccari, P. S. No. 646.)

21. XANTHOPHYLLUM INSIGNE, A. W. Benn. in Hook. fil. Fl. Br. Ind. I, 211. A glabrous tree with pale branchlets. *Leaves* drying brown, coriaceous, elliptic, obtuse, the base slightly narrowed; upper surface shining; lower dull, pale, the 6-8 pairs of nerves and rather wide reticulations prominent; length 4·5 to 6·5 in., breadth 3 to 3·5 in.; petiole stout, ·6 in. Racemes 3 to 4 in. long, axillary, sometimes terminal and panicled. *Flowers* ·6 to ·75 in. long; *sepals* unequal, sub-orbicular, puberulous. *Petals* spathulate, glabrous except the pubescent claw; keel adpressed-sericeous, its claw pubescent. *Stamens* 8, the filaments flat at the base and rising from an annular entire undulate disc which surrounds the ovary. *Ovary* ovoid, ridged, glabrous, ovules 16; style little curved, glabrous. *Fruit* globose, 3 in. in diam., minutely rugose, pericarp ·5 in., thick; seeds oblong, 1 in. long, embedded in pulp.

Malacca; Maingay, No. 348. Miller.

ORDER XII. PORTULACEÆ.

Herbs, rarely undershrubs. *Leaves* opposite or alternate, entire; nodes with scarious or hairy appendages, rarely naked. *Inflorescence* various. *Sepals* 2, imbricate. *Petals* 4-5, hypogynous or perigynous, free (or united below), fugacious. *Stamens* 4-∞, inserted with (rarely upon) the petals, filaments slender; anthers 2-celled. *Ovary* free, or ½-inferior, 1-celled; style 2-8-fid, divisions stigmatose; ovules 2-∞, on basal funicles or a central column, amphitropal. *Capsule* with transverse or 2-3-valvular dehiscence. *Seeds* 1-∞, compressed; embryo curved round a mealy albumen. Distrib. Cosmopolitan, chiefly American: genera 15, species about 125.

1. PORTULACA, Linn.

Diffuse, usually succulent, annual or perennial herbs. *Leaves* with scaly or hairy nodal appendages. *Flowers* terminal, surrounded by a whorl of leaves, solitary or clustered. *Sepals* connate below, the free part deciduous. *Petals* 4-6, perigynous or epipetalous. *Ovary* ½-inferior; style 3-8-fid; ovules ∞. *Capsule* crustaceous, dehiscing transversely. *Seeds* ∞, reniform. Distrib. Tropical regions, chiefly American; one or two are cosmopolitan weeds extending to temperate regions; species 16.

1. PORTULACA OLERACEA, Linn. An annual glabrous, sub-succulent, prostrate herb, 6 to 12 inches long; sometimes with minute scarious appendages at the nodes. *Leaves* flat, cuneate-oblong, rounded or truncate at the apex, ·25 to 1·25 in. long: petiole very short. *Flowers* in few-flowered terminal heads or in dichotomous cymes, sessile, surrounded

by a few ovate, pointed scarious bracts: *petals* 5, equal to the sepals, yellow: *stamens* 8 to 12: *style* 3-8-cleft: *seeds* punctate: Roxb. Fl. Ind. II, 463; W. & A. Prodr. 356. *P. lævis*, Ham. in Wall. Cat. 6841. Hook. fil. Fl. Br. Ind. I, 246. *P. suffruticosa*, Thw. Enum. 24 (not of Wight).

In the Andamans, and probably in all the Provinces, in waste places. Distrib. All warm climates.

2. PORTULACA QUADRIFIDA, Linn. An annual with diffuse filiform stems, rooting at the nodes; nodal appendages copious, pilose. *Leaves* flat, opposite, ovate or ovate-lanceolate, acute, almost sessile; length ·2 to ·35 in. *Flowers* solitary, terminal; calyx tube partly immersed in the extremity of the axis, surrounded by long silky hairs and by about 4 bracteoles: *petals* 4, yellow; *stamens* 8 to 12; *style* filiform, deeply 4-fid. *Seeds* minutely tuberculate. DC. Prod. III, 354. Wight Ill. ii, t. 109. Hook. fil Fl. Br. Ind. I, 247. Oliver Fl. Trop. Africa, I, 149. *P. meridiana*, L. Roxb., Fl. Ind. II, 463. *P. geniculata*, Royle Ill. 221. *P. anceps*, Rich. Fl. Abyssin., I, 301.

Penang, in the Fort; Curtis. Distrib. Throughout the Tropics of Asia, S. Africa.

ORDER XIII. HYPERICINEÆ.

Herbs or shrubs, rarely trees. *Leaves* opposite, often punctate with pellucid glands or dark glandular dots, entire or glandular-toothed; stipules 0. *Flowers* solitary or cymose, terminal, rarely axillary. *Sepals* and *petals* each 5, rarely 4; petals contorted in bud. *Stamens* indefinite, or rarely definite, 3- or 5-adelphous, rarely free or all connate; anthers versatile. *Ovary* 3- 5-carpellary, 1- or 3-5-celled; styles as many, filiform, free or united; ovules few or numerous, on parietal or axile placentas, anatropous, raphe lateral or superior. *Fruit* capsular or bactate. *Seeds* exalbuminous, sometimes winged; embryo straight or curved. Distrib. Temp. countries and mountains of warm regions; genera 8, species about 210.

1. CRATOXYLON, Blume.

Shrubs or trees. *Leaves* entire, usually papery. *Inflorescence* axillary or terminal, cymose. *Sepals* and *petals* each 5, *Stamens* 3- or 5-adelphous, with fleshy hypogynous glands alternating with the bundles. *Ovary* 3-celled; styles distinct; ovules 4- 8 in each cell. *Capsule* 3-valved, seeds winged. Distrib. Tropical Asia; species about 12.

Sect. I. ANCISTROLOBUS, Spach. *Petals* sub-persistent, inappendiculate. *Stamens* 3-delphous; glands more or less cucullate.

1. CRATOXYLON POLYANTHUM, Korth. Verhand. Nat. Gesch. Bot. 175, t. 36. A large shrub, or tree 30 to 40 feet high, all parts glabrous;

young branches pale brown, compressed. *Leaves* membranous, minutely pellucid-punctate, elliptic-oblong, almost equally acute at base and apex; above shining, below rather dull; nerves about 7 to 10 pairs, pale; reticulations minute; length 1·5 to 3·5 in., breadth ·75 in. to 1·25 in., petiole ·1 in. *Flowers* slightly supra-axillary, solitary or in 1 to 3-flowered cymes, ·5 in. in diam. *Sepals* elliptic, obtuse, as long as the petals. *Petals* oblanceolate, veined. *Hypogynous glands* large, fleshy. *Capsule* slightly exceeding the persistent sepals. *Seeds* obliquely winged. Hook. fil. Fl. Br. Ind. I, 257. Miq. Fl. Ind. Bat. I, pt. ii, p. 516.

All the Provinces. Distrib. British India, China, Philippines.

Var. 1. LIGUSTRINUM, Blume Mus. Bot. II, 16 (sp.); leaves narrowed at both ends, acute. *C. lanceolatum*, Miq. Fl. Ind. Bat. Supp. I, 500. *Ancistrolobus ligustrinus*, Spach. Suit. Buff. V, 361. *A. brevipes*, Turcz. Bull. Mosc. 1858, I, 383. *Hypericum pulchellum*, Wall. Cat. 4821. *H. carneum*, Wall. Cat. 4820.

Andamans, Malacca, Penang.

Var. 2. WIGHTII, Bl. l. c. 18. (sp.) Leaves broadly oval, mostly obtuse. *Ancistrolobus* sp. Wight Ill. I, 111. *Hypericum horridum*, Wall. Cat. 4822. *Elodea* sp. Griff. Notul. IV, 569.

Perak, King's Collector.

Sect. II. TRIDESMIS, Spach. *Petals* not persistent, with a basal squamule. *Stamens* 3- or 5-adelphous.

2. CRATOXYLON ARBORESCENS, Blume Mus. Bot. II, 17. A tree 15 to 50 feet high, all parts glabrous. Young branches robust, the bark pale brown, often ridged. *Leaves* coriaceous, broadly oblanceolate, obovate-elliptic or oblong-obovate, very shortly acuminate; dull on both surfaces, the lower pale, yellowish-brown with black dots; nerves numerous, obsolete; length 3 to 4·5 in., breadth 1·25 to 2 in.; petiole ·25 in., stout. *Cymes* in large terminal panicles usually longer than the leaves. *Flowers* ·3 in. in diam. *Sepals* unequal, ovate-rotund, veined. *Petals* about as long as the sepals, broadly cuneate, conspicuously veined and with a laciniate basal scale. *Capsule* longer than the persistent sepals. *Seeds* winged all round. Hook. fil. Fl. Br. Ind. I, 258; Kurz Fl. Burm. I, 84; *C. coccineum*, Planch. *Hypericum arborescens*, Vahl. Symb. II. 86, t. 43. *H. coccineum*, Wall. Cat. 4823. *Ancistrolobus glaucescens*, Turcz. Bull. Mosc. 1858, I, 383. *Vismia? arborescens*, Choisy Prod. Hyp. 36.

In all the Provinces. Distrib. Malayan Archipelago: Burmah.

Var. *Miquelii*, branches more slender than in the typical form; leaves thinner in texture, oblanceolate, acuminate. A small tree 15 to 20 feet. *C. cuneatum*, Miq. Fl. Ind. Bat. I, pt. ii, 517.

Penang, Perak. Distrib. Sumatra.

3. CRATOXYLON FORMOSUM, Benth. and Hook. fil. Gen. Pl. I, 166 A shrub or tree 20 to 6 feet high, all parts quite glabrous, young branches pale. *Leaves* membranous, broadly elliptic to elliptic-oblong, acute or rounded, the base slightly narrowed; upper surface shining; lower dull pale, glaucescent and with numerous minute black dots; main nerves 6 to 8 pairs, little more prominent than the secondary; length 3 to 4 in., breadth 1·75 to 2·25 in.; petiole ·25 in., thin. *Cymes* axillary, or from above the scars of fallen leaves, 2-3 flowered *Flowers* ·75 in. long, their pedicels ·5 in. *Sepals* elliptic, pointed, faintly veined, ·2 in. long, nearly equal, not accrescent. *Petals* thin, prominently veined, elliptic, with a narrow scale above the slender claw; *Hypogynous glands* small, oblong or quadrate, crimson. Tubes of staminal bundles long, slender, exserted. *Capsules* cylindric, acute, ·6 in. long. *Seeds* ·3 in. long, with an obtuse obovate unilateral wing. Hook. fil. Fl. Br. Ind. I, 258; Kurz Fl. Burm. I, 84. *Tridesmis formosa*, Korth. Verh. Nat. Gesch. Bot. 179, t. 37; Miq. Fl. Ind. Bat. I, pt. ii, p. 517. *T. ochnoides*, Spach Suit. Buff. V, 359. *Elodea formosa*, Jack in Hook. Journ. Bot. I, 374.

In all the Provinces. Distrib. Siam, Philippines, Malayan Archipelago.

4. CRATOXYLON MAINGAYI, Dyer in Hook. fil. Fl. Br. Ind. I, 258. A tree 30 feet high; all parts glabrous: young branches with pale brown, ridged, bark. *Leaves* coriaceous, elliptic, acuminate at apex and base; both surfaces shining, the lower paler; main nerves obscure, about 6 pairs; length 2 to 3·5 in., breadth 1 to 1·5 in., petiole ·25 in. *Cymes* axillary, or from above the scars of fallen leaves, few-flowered. *Flowers* about ·5 in. long, their pedicels ·25 in. *Sepals* oblong, unequal. *Petals* elliptic, clawed, veined, the basal scale acute. *Capsule* ·5 in. long, narrowly cylindric. *Seeds* ·25 in. long, with oblong unilateral wing.

Penang; Maingay.

Apparently an uncommon tree, since only Maingay has as yet collected it.

ORDER XIV. GUTTIFERÆ.

Trees or shrubs with yellow or greenish juice. *Leaves* opposite, coriaceous or membranous, rarely whorled or stipulate. Flowers axillary or terminal, solitary, fascicled, subracemose or panicled, white, yellow or red, regular, dicecious, polygamous or hermaphrodite. *Sepals* 2-6, imbricate or in decussate pairs. *Petals* 2-6 (rarely more, or 0), usually much imbricated or contorted. MALE FL.: *Stamens* usually indefinite, hypogynous; filaments free or variously connate, monadelphous or in as many bundles as there are petals; anthers various. FEMALE FL.: *Staminodes* various. *Ovary* 1-2-∞-celled; style slender, short or 0; stigmas

as many as the cells, free or connate, sometimes peltate; ovules 1-2 or ∞, axile, or erect from the base of the cell. *Fruit* usually baccate and indehiscent. *Seeds* large, albumen 0; embryo consisting of a large radicle (*tigellus*) with small or obsolete cotyledons, or of thick free or consolidated cotyledons with a very short inferior radicle. A large tropical family, common in Asia and America, rare in Africa, of 24 genera and 320 species.

Tribe I. *Garcineæ.* Cells of ovary 1-ovuled; stigma sessile or sub-sessile, peltate, entire or with radiating lobes. Fruit baccate, indehiscent: embryo with cotyledons minute or undistinguishable.

Calyx of 4 or 5 sepals ... ... 1. *Garcinia.*

Tribe II. *Calophylleae.* Ovary with 1 to 4 erect ovules: style 1, slender: stigma peltate, 4-fid. Fruit fleshy, usually indehiscent. Embryo with 2 distinct cotyledons.

Ovary 1-celled.

Ovules solitary, style 1, stigma peltate ... 2. *Calophyllum.*

Ovules 4; style 1, 4-fid. with a stigma above each segment ... ... 3. *Kayea.*

Ovary 2-celled, 4-ovuled.

Style 1, stigma peltate ... ... 4. *Mesua.*

1. Garcinia, Linn.

Trees, usually with yellow juice. *Leaves* evergreen, coriaceous, very rarely stipulate. *Flowers* solitary, fascicled, or panicled; axillary or terminal; polygamous. *Sepals* 4-5, decussate. *Petals* 4-5, imbricate. Male fl.: *Stamens* ∞, free, or collected into a ring, or an entire globose or conical 4-5-lobed mass, often surrounding a rudimentary ovary; anthers sessile, or on short thick filaments, 2 rarely 4-celled, adnate or peltate, dehiscing by slits or pores, or circumsciss. Female or hermaphrodite fl.: *Staminodes* 8-∞, free or connate. *Ovary* 2-12-celled; stigma sessile or sub-sessile, peltate, entire or lobed, smooth or tubercled; ovules solitary in each cell, attached to the inner angle of the cell. *Berry* with a coriaceous rind. *Seeds* with a pulpy aril. Distrib. Tropical Asia, Africa, and Polynesia; species about 100.

Subgenus I. Garcinia proper. Sepals 4, decussate: petals 4, imbricate.

Sect. 1. Stamens of male flower occupying both sides of 4 pedicelled fleshy processes; anthers sessile, 2-celled, the cells more or less orbicular

(4-celled in *cuspidata*) dehiscing longitudinally, the connective thick; rudimentary stigma hemispheric, entire, discoid and flat, or concave (in *Merguensis* and *rostrata*); the style long, cylindric — *species* 1 to 7.

Sect. 2. Stamens of male flower in a 4-lobed mass surrounding the rudimentary ovary: anthers 2-celled, oblong, dehiscing longitudinally.

Rudimentary stigma 6 to 8-lobed ... — *species* 8 to 10.

Rudimentary stigma none ... ... — *species* 11 to 13.

Sect. 3. Stamens in a single un-lobed mass; anthers 2-celled.

Stamens of male flower in a cone: rudy. stigma large convex ... ... — 14. *Malaccensis.*

Staminal receptacle stipitate: anthers broadly oblong, curved, dehiscence longitudinal; rudy. stigma broad, discoid ... ... — 15. *Maingayi.*

Stamens in whorls on a thin annular fleshy receptacle ... ... — 16. *atro-viridis.*

Stamens of male flower on a flat or convex sessile receptacle.

Anthers bent round the apex of the connective (horse-shoe-shaped) dehiscing along the convexity: rudy. stigma 0

Leaves white beneath ... — 17. *opaca.*

„ green „ ... — 18. *calycina.*

Anthers thick, cuneate, with flat broad tops, the connective large, cells dehiscing longitudinally.

Rudy. stigma large, discoid ... — 19. *costata.*

„ „ none ... — 20. *Griffithii.*

Anthers with small connective, cells suborbicular, dehiscing longitudinally: rudy. stigma 0 ... ... — 21. *Forbesii.*

Anthers with the connective lengthened transversely and bearing at its extremities the small oval anther cells: rudy. stigma 0 ... ... — 22. *Bancana.*

Sect. 4. Anthers 4-celled ... ... — *species* 23 *to* 26.

Sect. 5. Anther cells surrounding the central connective, often confluent, their dehiscence circumscissile: rudy. stigma 0 ... ... — *species* 27 *to* 30.

SUB-GENUS II. XANTHOCHYMUS.

Sepals and petals 5, all imbricate ... *species* 31 *to* 36.

Subgenus I. GARCINIA proper, sepals 4, decussate: petals 4, imcate.

1. GARCINIA EUGENIÆFOLIA, Wall. Cat. 4873. A small tree; the young branches thin, 4-angled, rather pale when dry. *Leaves* sub-coriaceous, elliptic, tapering to each end, the apex with a short blunt tail; upper surface shining; the lower dull, pale, opaque; nerves thin, spreading, less than ·1 in. apart, very indistinct on either surface; length 2 to 3·5 in., breadth ·9 to 1·35 in., petiole ·2 to ·25 in. *Male flowers* ·2 in. in diam., in axillary or terminal, minutely bracteate, 3- to 6-flowered fascicles; pedicels ·2 in. long. *Sepals* 4, orbicular, the outer pair small, the inner pair as large as the petals. *Petals* 4, orbicular, thin with a circular thickened coloured fleshy spot near the base: *Stamens* numerous, forming with the rudy. stigma a dense convex mass; *anthers* numerous, on both sides of 4 fleshy processes, orbicular-oblong, 2-celled, the dehiscence vertical: rudy. stigma large, hemispheric, the style cylindric. *Female flower:* ·25 in. in diam., in pedunculate 3-flowered cymes, sometimes several from same axil, pedicels ·25 to ·35 in. *Sepals* 4; the outer pair small, fleshy, ovate-orbicular; the inner pair thin, nearly as large as the petals, slightly keeled at the base; *petals* as in the male: Staminodes and disk absent. *Stigma* large, hemispheric, sub-papillose, entire, covering nearly the whole of the ovary. Fruit in fascicles of 2 to 4, globular, ·75 in. in diam., smooth, brown, crowned by the papillose stigma; calyx not persistent. Hook. fil. Fl. Br. Ind. I, 268; Pierre Fl. Forest. Coch-Chine, fasc. VI, p. vi, in part; *G. brevirostris*, Scheff. Obs. Phyt. II, 41.

Penang: Wallich, Curtis, No. 669. Tenasserim and Andamans; Helfer, 855. Perak; King's Collector Nos. 8604, 5954, Wray No. 461.

There are two specimens in the Calcutta Herbarium of *G. brevirostris*, Scheffer, named by the author himself; and they agree absolutely with Wallich's No. 4873. This species is quite distinct from Griffith's No. 858 (Kew Dist.) from Malacca, which Pierre not only reduces here, but of which he figures (tab. 90 E. F.) the flowers as the flowers of this. This species does not appear to be a common one. Specimens of other things appear to have been so much confounded with it, that I forbear to quote more synonyms than *G. brevirostris*.

2. GARCINIA MERGUENSIS, Wight Ill. 122, Ic. 116. A tree 30 to 40 feet high; young branches thin, terete, dark brown when dry. *Leaves* ovate-elliptic to lanceolate, bluntly caudate-acuminate, the base cuneate; upper surface when dry shining, dark brown; the lower dull

pale brown, the midrib distinct on both; nerves indistinct, thin, spreading, about ·075 in. apart: length 3 to 3·5 in., breadth 1·1 to 1·4 in., petiole ·25 in. *Male flowers* ·15 in. in diam., in rather dense axillary minutely bracteolate 3- to 6-flowered cymes longer than the petioles: pedicels ·2 in., buds globose: *sepals* 4, fleshy, the outer pair small, ovate-orbicular, sub-acute; the inner pair orbicular, all concave; petals 4, orbicular, fleshy, concave, covering the stigma in bud: *anthers* numerous on both sides of 4 fleshy processes, sessile, oblong, dehiscing suturally; rudy. style long, cylindric, thick: stigma discoid, smooth, flat. *Hermaphrodite flowers; sepals* 4, the outer pair as in the male ovate-orbicular, thin: *petals* 4, orbicular-reniform, fleshy, not covering the stigma: *stamens* numerous on both sides of 4 triangular fleshy pro-cesses; *anthers* sessile, sub-orbicular, dehiscing vertically by the sutures: *stigma* sessile, very large, hemispheric, convex, smooth, covering the anthers when young. *Female flowers; sepals* 4, the outer pair much smaller than the inner, all thin and concave: *petals* 4, orbicular, about the same size as the inner sepals, concave, thinly coriaceous, with a thickened coloured patch at the base: staminodes and disk 0: *stigma* semi-hemispheric, almost covering the whole ovary. *Fruit* pedicelled, globular, ·75 in. in diam., smooth, covered by the concave smooth stigma. Hook. fil. Fl. Br. Ind. I, 267; Kurz Fl. Burm., I, 89: Pierre Flora Forest. Coch-Chin. fasc. VI, p. vi, tab. 68, 69, 91, D..

Malacca; Griffith, Maingay, No. 155, Kew Distrib. Perak; Scortechini Nos. 244*a* and 812, King's Collector, No. 2660, Wray, 1075. Penang; Curtis, No. 900.

Maingay No. 155 is the type of Pierre's species *G. fulva*, but, in spite of very careful dissection of many of the flowers of this most puzzling plant, I cannot see my way to adopting that as a species separable from *G. merguensis*, Wight.

3. GARCINIA ROSTRATA, Benth. and Hook fil. Gen. Plantar. I, 174. A tree 30 to 40 feet high. Young branches terete, pale, slender. *Leaves* thinly coriaceous, elliptic-oblong, with a rather short blunt acumen, the base much narrowed: both surfaces shining, the lower rather pale, midrib prominent: nerves very numerous, thin, sub-horizontal, rather distinct when dry, especially on the lower surface; length 2·5 to 3·5 in., breadth 1·25 to 1·75 in., petiole ·2 in. *Male flowers* ·15 in. in diam., in slender, pedunculate, lax, often dichotomous, 3- to 9-flowered cymes which are in fascicles of 2 to 4 in the axils of the leaves; buds depressed-globose, ·1 in. in diam.; the pedicels ·25 to ·35 in., slender: *sepals* 4, orbicular, concave, the outer pair small, fleshy, the inner thin as large as the petals: *petals* 4, orbicular, concave, thin, each with a fleshy coloured circular patch near its base: *stamens* numerous; *anthers* sessile, on both

sides of 4 thick fleshy processes; cells 2, orbicular-oblong seated on the apex of the thick connective, dehiscing along the convexity: stigma very large, discoid, smooth, depressed in the centre, covering the stamens. *Hermaphrodite flowers* in 3-flowered, axillary, solitary, sessile, bracteolate cymes; sepals as in the male; *petals* 4, orbicular-reniform, not covering the stigma, otherwise as in the male; *anthers* in 4 masses as in the male, 4-celled; *stigma* sub-sessile, covering the whole ovary, large, discoid, smooth, entire. *Fruit* solitary, or 2 or 3 from an axil, ovoid, sub-orbicular, ·5 to ·65 in. long and rather less in diam, smooth, crowned by the discoid sub-concave stigma. Pierre Fl. Forest. Coch-Chine, fasc. VI, p. v, tab. 91, B. *Discostigma rostratum*, Hassk. Cat. Pl. Hat. Bogor. 213. Hook. fil. Journ. Linn. Soc. XIV, 486.

Malacca; Griffith, No. 855, Maingay 156. Perak: Scortechini 1962, King's Collector Nos. 8486, 10762. Distrib. Java.

This is readily distinguished by its small flowers on slender pedicels, and by its flattened buds: also by the sub-horizontal, close, rather distinct, venation of the leaves.

4. Garcinia cuspidata, King, n. sp. A tree 60 to 70 feet high; the young branches terete, dark-coloured. *Leaves* elliptic-ovate, shortly sub-spathulate, cuspidate, the base narrowed; upper surface shining, the lower dull; nerves sub-horizontal, distinct beneath when dry, ·1 in. apart, anastomosing with an intramarginal nerve; length 2·5 to 3·25 in., breadth 1·1 to 1·5 in., petiole ·3 in. *Male flowers* ·15 in. in diam., in shortly pedunculate, axillary, 6 to 9-flowered, spreading cymes; buds pyriform; pedicels slender, ·3 to ·6 long; *sepals* 4, equal, reflexed, orbicular, thin, concave; *petals* 4, reflexed, covering the stamens and stigma in bud, thin, orbicular, concave, a little larger than the sepals: *stamens* numerous, on both sides of 4 fleshy processes, filaments very short and thick: *anthers* with 4 globular cells, each dehiscing by a long vertical suture; *style* short, cylindric; stigma capitate, small, quite concealed by the staminal masses. *Female flowers* and *fruit* unknown.

Perak, at low elevations: King's Collector, No. 10865.

Collected only once by the late Mr. Kunstler. The leaves a good deal resemble those of *G. rostrata*, Hassk.; but the nerves are slightly more distinct, and the flowers have a different androecium, although externally they much resemble those of *G. rostrata*, Hassk.

5. Garcinia Wrayi, King, n. sp. A small spreading tree; young branches very slender, terete, dirty yellow. *Leaves* thinly coriaceous, ovate or elliptic, the apex produced into a long sub-spathulate point, the base cuneate; upper surface shining, the lower dull, pale; nerves slender, sub-horizontal, ·05 in. apart, invisible on the upper and faint on the lower surface even when dry; length 2 to 2·5 in., of which

the apical tail is sometimes as much as ·75 in., breadth ·8 to 1·2 in.; petiole ·2 in. *Male flowers* ·15 in. in diam., in axillary fascicles of 2 or 3; buds globose, pedicels ·15 in.; perianth reflexed, *sepals* 4, the outer less than half as large as the inner pair, all orbicular, sub-coriaceous and concave; *petals* 4, ovate-orbicular, blunt, with a thickened spot near the base, covering the stamens in bud; *stamens* numerous, on both surfaces of 4 fleshy processes; anthers sessile, globular-oblong, the connective rather thick, 2-celled, dehiscence vertical; rudy. style cylindric, convex, smooth. *Female flowers* axillary, solitary, pedicels as in the male; *sepals* 4, orbicular, thin, concave, about the same size as the petals and neither sepals nor petals quite covering the stigma in bud: *petals* 4, orbicular, concave, with a coloured thickened spot near the base; disk lobed, shallow, fleshy: staminodes none; *ovary* cylindric; *stigma* hemispheric, smooth, entire, enveloping the whole of the ovary, ultimately becoming discoid and slightly depressed in the middle.

Perak; on Ulu Batang Padang and on Gunong Batu Pateh, at elevations of 4,500 feet and upwards. Wray, Nos. 267, 362, 1527; Scortechini, No. 323*b*.

I have not seen ripe fruit of this, but (from the appearance of a young one) it is probably ovoid. In its leaves, this species rather resembles *G. merguensis* and *rostrata*.

6. GARCINIA DIVERSIFOLIA, King, n. sp. A tree 40 to 60 feet high; young branches rather thick, 4-angled, yellowish. *Leaves* lanceolate and sub-acute, to elliptic and shortly and bluntly cuspidate, the base always cuneate; upper surface shining, the lower dull, slightly pale when dry; midrib prominent on both surfaces; the nerves numerous, about ·05 in. apart, spreading, straight, visible on the upper, invisible on the lower surface; length of the lanceolate form 3·5 to 4·5 in., breadth 1·5 to 1·75 in.; length of the elliptic form 2·5 to 4·25 in.; breadth 1·4 to 2·75 in., petiole ·2 to ·4 in. *Male flowers* ·75 in. in diam., in 3 to 6-flowered, bracteolate, axillary cymes; buds globular-ovoid; pedicels unequal, from ·2 to ·4 in.; bracteoles orbicular, fleshy: *sepals* 4, orbicular, fleshy, concave, the outer pair small, united by their bases and sometimes irregularly denticulate, inner pair as large as the petals: *petals* 4, ovate-orbicular to orbicular, fleshy, concave; *stamens* very numerous, occupying both sides of 4 fleshy processes: anthers sessile, 2-celled, the connective thick, bifid, bearing at its upper part the two sub-orbicular suturally-dehiscent cells: rudy. pistil with cylindric style thickened upwards: the stigma large, hemispheric, entire, sub-papillose. *Female flowers* in cymes like the males but fewer-flowered and often terminal, perianth as in the male; staminodes apparently none; *ovary* depressed-globose, smooth: *stigma* sessile, discoid, entire, its surface

minutely lobulose. *Fruit* (unripe) sub-globular, ·6 in. in diam., crowned by the stigma.

Perak; at elevations of 3000 to 3,500 feet, King's Collector, No. 6920, Wray, No. 1209.

7. GARCINIA CADELLIANA, King, n. sp. A tree about 30 feet high; the young branches, slender, terete, brownish yellow. *Leaves* thinly coriaceous, elliptic to elliptic-oblong, sub-acute, the base very cuneate; both surfaces shining; main nerves 10 to 12 pairs, inter-arching very near the margin, thin, slightly prominent on both surfaces when dry; length 3·5 to 5·5 in., breadth 1·5 to 2·5 in.; petiole ·25 to ·35 in., stout. *Male flowers* ·25 in. in diam., in dense 3 to 8-flowered axillary fascicles, buds globose, pedicels ·1 in., bracteolate at the base, stout; *sepals* 4, slightly unequal, small, orbicular, fleshy, the edges thin: *petals* 4, obovate-orbicular, fleshy, concave: *stamens* numerous, on both sides but especially on the inner sides of 4 fleshy processes opposite the petals; anthers oblong, sessile, 2-celled, the dehiscence longitudinal; style cylindric, as long as the staminal bundles; stigma large, hemispheric, papillose, entire. *Female flowers* and fruit unknown.

Andamans; King's Collector, No. 371.

8. GARCINIA SPECIOSA, Wall. Pl. As. Rar iii. t. 258. A tree 40 to 60 feet high; the young branches slightly 4-angled, yellowish when dry. *Leaves* thinly coriaceous, oblong or elliptic-oblong, sometimes ob-lanceolate, shortly acuminate, the base cuneate; both surfaces shining, the midrib, main and intermediate nerves all rather prominent; length 5 to 8 in., breadth 2 to 3·75 in.; petiole ·5 to ·6 in. *Male flowers* 1·5 to 2 in. in diam., terminal in fascicles of 4 or 5, or solitary; peduncles longer than the petioles. *Sepals* 4, fleshy, concave, slightly unequal, 1 pair ovate and 1 pair reniform. *Petals* 4, yellow, larger than the sepals, rotund, slightly clawed. *Stamens* numerous, in 4 short, thick, diverging, oval masses confluent at the base; filaments short; anthers oblong with longitudinal dehiscence. *Style* short, thick, columnar; rudy. stigma large, convex, with 6 shallow, broad, blunt lobes. *Female flowers* solitary, terminal, on short thick pedicels; perianth larger than in the male; ovary sub-globular, the stigma large, convex, the margin 6 to 8-lobed. *Flower* unknown. Unripe *fruit* ovoid, sub-globose, apiculate, the hardened stigma and the thickened sepals persistent. Wall. Cat. 4855, 4852 E. *Garcinia affinis*, Wall. Cat. 4854. Choisy Guttif., Ind. 23; Planch. and Triana Mem. Guttif., 171; Kurz For. Fl. Burma. I, 88; Pierre Fl. Forest. Coch-Chine, fasc. IV, p. xiv, tab. 79, excl. figs. H. and I.

Andaman Islands; Kurz. Distrib. Tenasserim.

This arboreous species is no doubt very closely allied to the shrubby

G. Kurzii, Pierre. And it appears probable that, although its headquarters are Burmah and Sylhet, *G. speciosa* does occur on the Andamans. M. Pierre relies, as a diagnostic mark of his *G. Kurzii*, on its having solitary male flowers, whereas those of *G. speciosa* are fasciculate. But in Calcutta Herbarium specimens of the same set which M. Pierre would refer to his *G. Kurzii*, the flowers are sometimes solitary and sometimes clustered. Another mark which M. Pierre relies on is that the peduncles of the flowers of *G. speciosa* are described by Wallich as two or three times as long as the leaf petioles, whereas in *G. Kurzii*, the peduncles are shorter than the petioles. The female flower of *G. speciosa* is described in the Flora of British India as unknown, and M. Pierre says the same of the female flower of his *G. Kurzii*. Wallich's specimens of *G. affinis* from Sylhet have advanced female flowers, and it is from these that I have described the female flower (figured by Pierre, tab. 79, fig. G.): for *affinis* appears to me in no way distinct from *speciosa*. Wallich was no doubt mislead by the size of the rudimentary stigma in the male flowers of *speciosa* into considering these as hermaphrodite, and it is probable that he never saw true female flowers. This view is supported by the fact that he does not describe either ovary or fruit. Pierre (l. c. t. 79, figs. H. and I.) gives drawings of what he believes to be the male and female flowers of *G. speciosa*. But in his text (fasc. VI, p. xiv), he states that the flowers thus figured were, in the specimen from which he took them, unattached to any leaf-twig and were mixed with flowers of other species. They are therefore altogether doubtful even for M. Pierre.

9. Garcinia Kurzii, Pierre, Flor. Forest. Coch.-Chine, fasc. VI, p. xiv, t. 78 B. A shrub with the branchlets and leaves of *G. speciosa*, but the leaves less acuminate and with longer petioles. Flowers as in *speciosa*, but the stamens less numerous and the rudimentary stigma discoid and flat. Ripe fruit unknown.

Andaman Islands; Kurz, King's Collector.

This differs from *G. speciosa* chiefly in being a shrub, and in its rudimentary stigma being flat and discoid, instead of convex. Both this and *speciosa* differ but little from *G. cornea*, Roxb., a species indigenous to Amboina.

10. Garcinia Hombroniana, Pierre, Fl. Forest. Cochin-Chine, fasc. VI, p. xii, t. 79, figs. D. E. F. J. A tree, with rather stout, 4-angled branches, yellowish when dry. *Leaves* elliptic to oblong-elliptic, slightly inequilateral, sub-acute or very shortly and abruptly blunt-acuminate; the base cuneate, slightly unequal: upper surface slightly glossy, the under rather dull; nerves numerous, ascending, not prominent on either surface; the midrib bold on both; length 3·5 to 5 on., breadth 2 to 2·75

in., petiole ·5 in. *Male flowers* about 1 in. in diam., terminal, in fascicles of 3 to 6, pedicels ·2 to ·4 in. *Sepals* thinly coriaceous, concave, the outer pair orbicular; the inner ovate-oblong, blunt. *Petals* ovate-orbicular, twice as long as the sepals. *Stamens* numerous; the filaments united in a fleshy, slightly 4-lobed, annulus on which the broad, oblong, vertically dehiscing anthers are inserted; rudimentary stigma slightly protruding above the mass of stamens, flat, 8-lobed. *Female flower* terminal, solitary, with sepals and petals like the male; staminodes absent. *Ovary* globose; the stigma large, convex, recurved at the edge when young, when adult with 8 shallow crenations. *Fruit* sub-globular, not mammillate, about 1 in. in diam.; the pericarp rather thin, sub-crustaceous; sepals persistent. *Seeds* about 6, oblong, with soft juicy arillus.

Malacca; Griffith, No. 857 (Kew Dist.). Perak; Scortechini (1 specimen). Nicobar Islands; Kurz, Jelinek.

This species, which has been established by M. Pierre, comes (as his own description and figures show) very near to *G. cornea*, Linn. It differs chiefly from *cornea* by its broader leaves, stouter branchlets and 8-lobed stigma. Curtis's Penang specimen No. 690, probably belongs to this species.

11. Garcinia mangostana, Linn. A glabrous tree 20 to 30 feet high; young branches cylindric, slightly grooved, the bark smooth, green. *Leaves* thickly coriaceous; shining on both surfaces, elliptic-oblong, acute or shortly acuminate, the base cuneate; nerves sub-horizontal, numerous, interarching with a double intra-marginal nerve, rather prominent beneath when dry; length 6 to 10 in., breadth 2·5 to 4·25 in., petiole ·75 to 1 in. *Male flowers* 1·5 in. in diam., in terminal fascicles of 3 to 9; pedicels ·5 to ·75 in., with several orbicular, concave, scarious bracts. *Sepals* 4, unequal, coriaceous, rotund, concave. *Petals* 4, larger than the sepals, ovate, fleshy, yellowish tinged with greenish red. *Stamens* indefinite, in a 4-lobed mass; filaments short: anthers oblong, ovate, recurved, dehiscence longitudinal. *Pistil* 0. *Disk* fleshy, as long as the stamens, its apex conical. *Hermaphrodite flowers* 2 in. in diam., solitary or in pairs at the apices of the young branches, and usually on different trees from the male flowers; pedicel ·5 in. long, stout, woody. *Calyx* and *corolla* as in the male, but larger. *Stamens* many; filaments slender, connate below; anthers irregular and mostly abortive. *Ovary* globular, 4 to 8-celled; stigma sessile, 8-rayed; ovules solitary. *Fruit* as large as a small orange, smooth, dark purplish brown; pericarp thick; seeds oblong, flattened, with large white juicy arillus. Bl. Bijdr. 213; DC. Prod. i, 560: Roxb. Fl. Ind. ii, 618: Bot. Mag. t. 4847: Choisy Guttif. Ind. 33: Planch. and Triana Mem. Guttif. 170: Miq. Fl. Ind. Bat. I, pt. ii, p. 506: Hook. fil. Fl. Br. Ind. i, 260: Kurz For. Fl.

Burm. I, 87; Lanessan Mem. Garcin. 15: Pierre Flor. Forest. Cochin-Chine t. 54.

Wild and cultivated in the Malayan Peninsula and Archipelago: cultivated also in Burma, Ceylon and a few places in the S. of India.

12. GARCINIA MICROSTIGMA, Kurz, Journ. Bot. 1875, p. 324; For. Flora Burmah, I, 91. A shrub 4 to 6 feet high: young branches obscurely 4-angled, the bark dark-coloured. *Leaves* elliptic to elliptic-oblong or lanceolate, sub-acute, the base cuneate; rather dull on both surfaces when dry, the midrib distinct beneath; main nerves 7 to 8 pairs, thin, interarching ·1 to ·2 in. from the margin; length 3 to 4 in., breadth 1·5 to 2·3 in., petiole ·5 to ·75 in. *Male flowers* ·3 in. in diam., in 2 to 3-flowered, few bracteoled, axillary cymes; buds globose; pedicels ·2 to ·25 in. long; *sepals* 4, the outer pair ovate-acute, fleshy, keeled, the edges thin, longer than the inner obovate-orbicular, very concave, thinner pair: *petals* 4, obovate-orbicular, fleshy, concave, about the same size as the inner sepals and barely covering the stamens; *stamens* about 20, on a single convex receptacle, filaments short; anthers red, broadly ovate, 2-celled, the dehiscence longitudinal: rudy. stigma 0. *Female flowers* (fide Kurz) on shorter pedicels than the male and probably solitary, terminal. *Fruit* globose, 1·5 to 2 in. in. diam., the pericarp smooth, thin, red, the sepals persistent at its base, and its apex bearing the very minute discoid sessile entire stigma; *seeds* 2 or more. Pierre Fl. Forest. Coch-Chine, fasc. VI, p. xix.

South Andaman; Kurz.

13. GARCINIA PENANGIANA, Pierre, Fl. Forest. Cochin-Chine, fasc. vi, p. xxxvii, No. 46a. A slender tree 20 to 30 feet high; the young branches glossy, pale brown when dry, slightly 4-angled. *Leaves* oblong-lanceolate, shortly and rather bluntly acuminate, the base cuneate; upper surface shining, the lower slightly dull and paler, both, (but especially the lower) with a reddish tint when dry; the midrib stout: nerves close, straight, sub-horizontal, faintly visible; length 4·5 to 7 in., breadth 1·5 to 2·5, or even 3 in.; petiole ·5 in. or less. *Male flowers* 1 in. in diam., in terminal fascicles of 3 to 6, pedicels about ·5 in. *Sepals* 4; the outer pair rotund, fleshy, very concave; the inner pair larger, thinner, elliptic, obtuse. *Petals* 4, rather longer than the inner sepals, oblong, blunt, creamy-white. *Stamens* indefinite, the filaments united in a slightly 4-lobed short fleshy mass: anthers short, broad, with longitudinal dehiscence; pistil 0. *Female flowers* terminal, solitary, larger than the male and on shorter stouter peduncles. *Style* short, thick: *ovary* globular; the stigma large, convex, hemispherical, corrugated, and deeply 4-lobed; *stamens* none. *Ripe fruit* globular, more than 1·75 in. in diam., crowned by the persistent stigma, the thickened

sepals persistent at its base; pericarp thin, crustaceous. *Seeds* few, ovate. *G. cornea*, Wall. Cat. 4852 D.; Hook. fil. Fl. Br. Ind. I, 260 (in part). *G. fascicularis*, Wall. Cat. 4853, Pierre l. c., p. xvi.

Penang; Porter (Wallich's Collector), Curtis. Perak; King's Collector, Scortechini.

This plant, first distinguished as a species by M. Pierre, seems to be rather common in Penang and Perak. Ripe fruits are as yet unknown: those in Mr. Kunstler's specimens No. 3583 (noted by him as unripe) measure 1·25 in. in diam. A fruit on one of Scortechini's specimens measures half an inch more. Mr. Kunstler notes the tree as occurring at elevations of 300 up to 3,000 feet. The foregoing description of the flower does not quite agree with that of M. Pierre, which was drawn up from specimens without female flowers and with buds only of the male flowers.

14. GARCINIA MALACCENSIS, Hook. fil. Fl. Br. Ind. I, 261. A tree; the branchlets rather stout, 4-angled. *Leaves* brown when dry, elliptic, shortly and abruptly acuminate, the base much narrowed, shining above, the lower surface rather dull; midrib bold, prominent on both surfaces; nerves numerous, faint, sub-horizontal, connected by oblique secondary nerves; length 4 to 8 in., breadth 1·5 to 2·5 in; petiole ·4 to ·6 in., channelled. *Male flowers* 1 in. in diam., in terminal fascicles of 4 to 6; pedicels ·35 to ·65 in. long. *Sepals* orbicular, concave, fleshy. *Petals* twice as long as the sepals, dull red, broadly ovate, shortly clawed. *Stamens* very numerous, densely imbricated in a sub-cylindric or conical truncate mass formed of the fleshy conjoined filaments; *anthers* adnate, broadly ovoid, 2-celled, the connective broad: stigma large, convex. *Ovary* abortive. *Female flowers* 1·5 to 2 in. in diam. terminal, solitary, red. *Staminodes* few or 0. *Ovary* globose, 8-celled; stigma sessile, large, convex, enveloping half the ovary, much corrugated and deeply 8-lobed. *Fruit* unknown. Pierre Flore Forest. Coch.-Chine, fasc. VI, p. xi, t. 78, fig. D.

Malacca; Maingay (Kew Distrib. No. 149). Of this I have seen only Maingay's specimens. In its leaves, in the colour of its flowers, and in its 8-lobed stigma, this resembles *G. mangostana*.

15. GARCINIA MAINGAYI, Hook. fil. Fl. Br. Ind. I, 267. A tree 40 to 60 feet high; young branches thick, 4-angled, and dark-coloured when dry. *Leaves* oblong-elliptic, obtuse with short blunt apiculus, the base narrowed; both surfaces shining, the lower pale brown when dry; nerves 9 to 13 pairs, bold, spreading, prominent beneath as is the midrib; length 4·5 to 7 in., breadth 2·25 to 3·25 in., petiole ·75 in. *Male flowers* 1 to 1·25 in. in diam., waxy white, in terminal or axillary, 3 to 6-flowered, shortly peduncled umbels; pedicels ·25 to ·5 in. long. *Sepals*

4, orbicular, fleshy, concave, the outer pair rather smaller than the inner. *Petals* 4, larger than the sepals, ovate-orbicular, fleshy, concave. *Stamens* very numerous, forming with the rudimentary pistil a dense globular mass; the filaments slender, in several rows from a stipitate fleshy receptacle; anthers oblong, curved, 2-celled, with extrorse longitudinal dehiscence; rudy. pistil cylindric, with a broad discoid stigma. *Female flowers* solitary, terminal, sub-sessile; *sepals* and *petals* as in the male but smaller; *staminodes* few, slender; *ovary* globose 4 to 6-celled; the stigma large, convex, papillose, entire or very slightly 4-lobed. *Fruit* globular, 2 to 2·5 in. in diam. when quite ripe; crowned by the large, flat, discoid, papillose, slightly 4-lobed stigma. Pierre Flore Coch.-Chine, fasc. VI, p. xvii.

Perak; common. Malacca; Maingay (Kew Dist. 160 and 161). Pangkore; Curtis No. 1610.

In Scortechini's field-note on this species, the young branches are described as terete; but, in the dried state, they are distinctly 4-angled.

Var. *stylosa;* stigma on a thick style ·3 in. long.

Perak. King's Collector, No. 5359.

Only specimens with immature fruit are known, but these differ from the typical form in no respect except the stout style.

16. GARCINIA ATROVIRIDIS, Griff. MSS. A graceful tree 40 to 60 feet high; the young branches rather thick, sub-terete, yellowish-grey when dry. *Leaves* coriaceous, both surfaces shining; narrowly oblong, very shortly but sharply acuminate, the base cuneate; nerves numerous, spreading, straight, indistinct when fresh, but rather distinct when dry, anastomosing ·05 to ·1 in. from the edge with a fine intra-marginal nerve: length 4·5 to 8 in., breadth 1·25 to 2 in, petiole, ·6 to ·75 in. *Male flowers* 1·25 in. in diam., in terminal clusters of few-flowered cymes, pedicels unequal, from ·25 in. to ·75 in., long. *Sepals* 4, fleshy, concave; the outer pair orbicular or transversely oblong; the inner pair broadly oblong or orbicular, fleshy with thin edges, larger than the outer pair, streaked with red inside. *Petals* 4, orbicular-obovate, concave, fleshy, larger than the sepals, red. *Stamens* very numerous, forming with the large convex rudimentary stigma a globose mass; filaments slender, nearly as long as the anthers, inserted in whorls on a thin annular fleshy receptacle: *anthers* narrowly oblong, 2-celled, extrorse, the dehiscence longitudinal. Rudy. style cylindric. *Female flowers* terminal, solitary, rarely geminate; *sepals* and *petals* as in the male, but the petals smaller; *staminodes* small, attached to a thin fleshy wavy annulus which surrounds the ribbed, sub-cylindric, 12- to 16-celled ovary. *Stigma* thick, fleshy, very convex, pileate, deep red, the edges undulate. *Fruit* (*fide*

Scortechini) globular, 3 in. in diam. yellowish-green, crowned by the sessile, concave, ribbed stigma. Hook. fil. Fl. Br. Ind. I, 266 : Pierre Fl. Coch.-Chine, fasc. VI, p. xxiv, tab. 80, fig. C.

Malacca; Maingay (Kew Dist. No. 154.) Perak; Scortechini, Wray. Wellesley Province, King's Collector. Penang, Curtis, No. 855.

According to Mr. Curtis, the fruit is eaten by the Malays in curries, and the tree is a very handsome one with pendulous branches. I have not seen fully ripe fruit, and the above description of it is taken from Fr. Scortechini's field notes.

17. GARCINIA OPACA, King. A tree 40 to 60 feet high ; the branchlets when dry, dull dirty yellow, striate. *Leaves* oblong, narrowed at each end, the apex sometimes shortly acuminate, the base cuneate ; upper surface slightly shining, lower surface opaque, whitish ; the rather numerous nearly horizontal nerves thin, little visible on either surface, the midrib bold and prominent on both ; length 4 to 5 in., breadth 1·75 to 2·25 in., petiole ·6 in. *Male flowers* ·75 in. in diam., in shortly pedicelled, 2 to 3-flowered, ebracteolate, terminal or axillary cymes ; pedicels ·25 in., annulated ; *sepals* 4, obovate, concave, thin, veined ; *petals* 4, similar to the sepals but a little larger : *stamens* numerous, on a single, convex, fleshy receptacle ; *anthers* sessile, depressed-globular, with circumscissile dehiscence : rudy. *stigma* 0. *Female flowers* solitary, terminal : *sepals* more coriaceous than those of the male flower ; staminodes 0 ; *ovary* cylindric ; stigma convex, smooth, the edge irregularly subcrenate. *Fruit* solitary, terminal, ovate-globose, slightly mammillate, crowned by the broad flat stigma which has 4 broad shallow rounded lobes ; the sepals rounded, cartilaginous, persistent ; pericarp brown when dry, thin, crustaceous. Seeds several, ovoid, flattened on one side. *G. cornea*, Wall. Cat. 4852 E.

Perak ; King's Collector, Scortechini.

Distinguished by its leaves opaque and whitish beneath and with faint sub-horizontal nerves. In fruit this resembles *G. Penangiana ;* but it has a very different stigma.

18. GARCINIA CALYCINA, Kurz, Journ. Bot. 1875, p. 324. A shrub 15 feet high ; young branches slender, slightly angled, pale brown when dry. *Leaves* thinly coriaceous, elliptic-oblong to elliptic, abruptly and shortly caudate-acuminate or sub-acute, the base cuneate ; upper surface shining, the lower rather dull and pale ; main nerves 7 or 8 pairs forming bold intra-marginal arches, the intermediate nerves very numerous, all slightly prominent beneath ; length 3 to 5 in., breadth 1·25 to 2 in., petiole ·3 to ·5 in. *Male flowers* ·15 in. in diam., axillary, solitary or in 2- to 3-flowered fascicles ; buds globular, pedicels ·15 in. long. *Sepals* and *petals* each 4, equal, orbicular, concave, the petals veined ; *stamens*

under 20, in a single convex group, the filaments very short, the connective rather thick, the elongate 2-celled anthers bent like a horse shoe over the apex of the connective and dehiscing along the convexity; rudy. stigma 0. *Female flowers* larger than the male, subsessile, solitary, axillary; *sepals* broadly ovate, the outer pair larger than the inner; staminodes about 12, distinct, short, square; ovary hidden by the large hemispheric, lacunose, deeply 4-lobed stigma. *Fruit* (immature) ovoid-oblong, smooth, the sepals persistent at its base and the apex crowned by the sessile stigma. Pierre Flore Forest. Coch.-Chine, fasc. VI, p. xxxiii, tab. 87 D.

Nicobar Islands; Kurz.

19. Garcinia costata, Hemsley MSS. in Herb. Kew. A tree 50 to 70 feet high; young branches pale, flattened. *Leaves* thinly coriaceous, elliptic, acute, the base cuneate; both surfaces rather dull, the lower paler; nerves bold, spreading, 13 to 18 pairs, very distinct on the lower surface when dry; length 6 to 14 in., breadth 3·5 to 6 in.; petiole 1 to 1·5 in., stout. *Male flowers* 1 to 1·25 in. in diam., in shortly peduncled, 3- to 5-flowered, terminal cymes; pedicels ·25 to ·5 in. *Sepals* 4, equal, orbicular, fleshy, concave. *Petals* larger than the sepals, pale yellow with a reddish tinge, orbicular-ovate, fleshy, concave. *Stamens* numerous, forming with the discoid stigma an oblong 4-angled mass; filaments short, thick, inserted on a fleshy receptacle; anthers thick, cuneate with flattish tops, 2-celled; the cells large, curved, with extrorse longitudinal dehiscence; rudimentary stigma large, discoid. *Female flowers* solitary, terminal, on short thick pedicels: *sepals* and *petals* as in the male: staminodes about 12: *ovary* with many vertical grooves; *stigma* large, discoid, with radiating grooves corresponding to those of the ovary, the edge wavy. *Fruit* depressed-spheroidal, 3 in. in diam. by 2 in. high, with many deep vertical grooves, pale rose-coloured to crimson.

Perak; on Gunong Bubo at elevations of 2500 to 3000 feet, King's Collector; Maxwell's hill, Wray.

A remarkably fine species, at once known by its large deeply grooved eatable fruit.

20. Garcinia Griffithii, T. Anders. in Hook. Fl. Ind. I, 266. A tree 60 to 100 feet high, the young branches sub-tetragonous, yellowish-green. *Leaves* large, coriaceous, bullate, oval to ovate-elliptic, sub-acute or rather blunt; the base slightly narrowed, sometimes slightly cordate; both surfaces shining, the lower paler; midrib stout; nerves 16 to 24 pairs, bold, sub-horizontal; length 9 to 16 in., breadth 4 to 8 in., petiole ·6 in. *Male flowers* ·75 in. in diam., in dense 3 to 10-flowered cymes from tubercles in the axils of leaves or of fallen leaves; pedicels ·25 in. *Sepals* 4, equal, orbicular, fleshy, concave. *Petals* 4, oblong, blunt

fleshy, red. *Stamens* from 25 to 40, in a square flat-topped mass: anthers nearly sessile, broadly oblong, the connective wide; the cells 2, lateral, slightly curved, their dehiscence longitudinal; rudy. ovary 0. *Female flowers* in few-flowered axillary cymes; pedicels thick, ·2 in. long. *Sepals* and *petals* as in the male; staminodes in 4 bundles of unequal length: ovary ribbed, 12-celled; style very short; stigma with many conical papillae, peltate, slightly depressed in the middle, its margins crenate, *Fruit* sub-globular, 2 to 3 in. in diam. when ripe, greenish yellow, crowned by the concave papillate stigma, very glutinous. Pierre Flore Coch.-Chine, fasc. VI, p. xxvi, tab. 80, fig. B.

Malacca; Griffith 861, Maingay 153 (Kew Distrib). Perak, common. Pangkore, Curtis 1609. Distrib. Sumatra; Forbes, No. 2994.

21. Garcinia Forbesii, King, n. sp. A small tree, young branches subtetragonous, yellowish. *Leaves* thinly coriaceous, oblanceolate to ovate-lanceolate, shortly acuminate, the base cuneate; both surfaces slightly dull when dry, the lower slightly pale; nerves spreading, anastomosing with an intra-marginal nerve, ·15 in. apart, the intermediate rather bold, all distinct below when dry; length 3·5 to 5 in. breadth 1·5 to 2·5 in., petiole ·3 to ·4 in. *Male flowers* ·25 in. diam. in 3 or 4-flowered clusters from small axillary tubercles, buds sub-globose, pedicels ·1 to ·15 in. *Sepals* 4, equal, rather thin, pale-coloured, orbicular, concave. *Petals* 4, fleshy, orbicular, dark-coloured, concave. *Stamens* numerous, in a single convex mass, the connective small; anthers sessile, sub-orbicular, 2-celled with longitudinal dehiscence; rudy. ovary 0. *Female flowers* axillary, solitary, sessile: *sepals* 4, broadly ovate, blunt, fleshy, concave; *petals* 4, orbicular, fleshy, concave, red to orange; *stigma* sessile, convex, completely covering the ovary, entire, its surface with prominent glandular papillæ. *Fruit* (young) ovoid, crowned by the stigma.

Perak; Wray 3396. Sumatra; Forbes Nos. 2936 and 3152.

22. Garcinia bancana, Miq. Fl. Ind. Bat. Suppl., 494. A tree 60 to 80 feet high; young branches stout, nodular, not angled, black and shining when dry. *Leaves* coriaceous, large, broadly obovate-lanceolate; the apex rounded, often slightly and bluntly mucronate: much narrowed in the lower third into the stout winged petiole; upper surface shining, the numerous and very oblique nerves distinct; lower surface dull, opaque, pale brown, the nerves obsolete; midrib prominent in both; length 5 to 7 in., breadth 2 to 3 in., petiole ·75 to 1·25 in. *Male flowers* ·15 in. in diam., in crowded fascicles of 6 to 12, from short densely bracteolate tubercles in the axils of leaves or of fallen leaves; pedicels unequal, ·25 to ·5 in. long; bracteoles ovate, coloured, ·1 in. or less. *Sepals* 4, orbicular, concave, fleshy, the outer pair larger than the inner. *Petals* 4, ovate, blunt, fleshy, concave. *Stamens* numerous, in a

convex sub-cylindric mass: the anthers sub-sessile, broad, with 2 small oval cells at the extremities of the transversely lengthened connective; rudimentary pistil 0. *Female flower* solitary ?, sub-sessile; staminodes 6 to 10, solitary or in two or three groups. *Ovary* sessile, globular, slightly grooved vertically: stigma hemispheric, with 8 triangular rays. *Fruit* ovoid, 1·25 in. long, and 1·1 in. diam.; about 8-seeded. Miq. Ann. Mus. Lugd. Bat. I, 208; Hook. Fl. Br. Ind. I, 263; Scheff. Obs. Phyt. pt. ii, 41; Pierre Flore Forest. Cochin-Chine fasc. VI, pp. xxvi and xxxviii. *Garcinia Lamponga*, Miq. Fl. Ind. Bat. Suppl. 494; Ann. Mus. Lugd. Bat. I, 208; Pierre l. c. *G. Hookeri*, Pierre l. c. p. xxvii. *G. leucandra*, Pierre, l. c. xxvii.

Perak; King's Collector, Scortechini. Malacca; Maingay (No. 158, Kew Dist.). Distrib. Banka, Sumatra.

I have examined the type specimens of Miquel's *G. bancana* and *Lamponga*, and I believe them to belong to one and the same species. One of his Sumatran specimens of *G. Lamponga* bears, however, besides leaves of the shape described above, some that are broadly elliptic. Pierre reduces to this two more of Miquel's Sumatran species, namely, *G. oxyedra* and *G.* ? *oxyphylla* (Fl. Ind. Bat. Suppl. 494, 495); but of these I have not seen Miquel's types.

23. Garcinia Cowa, Roxb. Fl. Ind. II, 622. A dicœcious tree 30 to 60 feet high: young branches slender, not angled, dark-coloured when dry. *Leaves* broadly lanceolate, acute at both ends, the apex sometimes acuminate, both surfaces rather dull when dry: the nerves thin but rather distinct when dry, numerous, rather straight, oblique; length 3·5 to 5 in. breadth 1 to 1·75 in. petiole ·3 to ·5 in. *Male flowers* ·4 in. in diam., axillary or terminal, in fascicles of 3 to 8; pedicels ·25 in. *Sepals* broadly ovate, fleshy, yellow. *Petals* twice as long as the sepals, obovate or oblong, blunt, yellow. *Stamens* numerous, on a convex fleshy receptacle, anthers 4-celled, stigma rudimentary. *Female flowers* ·8 in. in diam., terminal, in fascicles of 2 or 3, pedicellate like the males; *ovary* sub-globose, 6 to 8-celled; *stigma* sessile, flat, deeply divided into 6 or 8, papillose, wedge-shaped rays; *staminodes* in 4 clusters of 3 to 8, unequal. *Fruit* globular-depressed, not mammillate, with 4 to 8 vertical grooves, smooth, yellow, ·8 to 1·5 in. in diam.; pericarp thin; *seeds* ·5 to ·75 in. long, oblong, with a soft arillus. DC. Prodr. i, 561; W. and A. Prodr. i, 101; Chois. Guttif. Ind. 34; Planch. and Triana Mem. Guttif. 186; Wall. Cat. 4863; Lanessan Mem. Garcin. 54; *G. Roxburghii*, Wight Ic. 104. Kurz For. Fl. Burm. I, 90. *Oxycarpus Gangetica*, Ham. in Mem. Wern. Soc. V, 344.

Andaman Islands ? Distrib. Assam and base of the Khasia Hills, Chittagong, Burmah; in tropical forests.

This is very near *G. Kydiana* but differs in the points noted under that species.

24. GARCINIA KYDIANA, Roxb. Fl. Ind. II, 623. A dicœceous tree, 25 to 40 feet high; the branchlets dark-coloured when dry, not angled. *Leaves* thinly coriaceous, lanceolate, acuminate, the base acute, both surfaces shining; nerves thin but distinct when dry, rather few for this genus; length 3 to 5 in., breadth ·75 to 1·5 in., petiole ·35 to ·5 in. *Male flowers* ·75 in. in diam., in small axillary or terminal pedunculate umbels of 3 to 5, or solitary; pedicels ·25 in. long; peduncles of the umbels ·4 to ·6 in. *Sepals* 4, equal, ovate, obtuse, fleshy, yellow. *Petals* twice as large as the sepals, broadly ovate, blunt, pale yellow. *Anthers* numerous, inserted into the slightly 4-lobed fleshy mass of conjoined filaments, square, 4-celled (a cell at each angle) pistil 0. *Female flowers* axillary and terminal, solitary, sessile. *Sepals* and *petals* as in the male; staminodes 4, small, 3 or 4-fid. *Ovary* globular, sessile, 6 to 8-lobed; stigma sub-sessile, with 6 to 8 spreading glandular rays. *Fruit* 1 to 1·5 in. in diam., smooth, yellow, globular, depressed, with 6 to 8 deep vertical grooves near the apex, and with a nipple-like protuberance from the depressed apex on which is inserted the persistent stigma. *Seeds* 6 to 8, oblong, ·85 in. long; the arillus soft, acid, juicy. Kurz For. Fl. Burm. I, 90, *in part*; Pierre Fl. Forest. Coch.-Chine, fasc. VI. p. xxix. Lanessan Mem. Garcin. 59, *in part; G. Roxburghii*, Wight Ic. 113; *G. Cowa* Roxb. Hook. fil. Fl. B. Ind. I, *in part.*

Andaman Islands.

Of the true Roxburghian *G. Kydiana*, the only specimens that I have seen are from the Andamans. The Burmese specimens referred to this species by Pierre and others belong mostly to *G. Cowa* as Roxburgh described and figured it. But the two species are very closely allied. The chief points that separate *Kydiana* from *Cowa* are its larger flowers, the arrangement of the males in distinct pedunculate umbels, the females always solitary and sessile; and, in the fruit, the curious nipple rising from the depressed apex, and the restriction of the vertical grooves to the neighbourhood of the apex. In the Flora of Br. India the two are united under *G. Cowa.* Griffith's Nos. 865 and 867, referred to *Kydiana* by Pierre, belong in my opinion to *G. nigro-lineata*, Planch.

25. GARCINIA NIGRO-LINEATA, Planch. MSS. A tree 20 to 50 feet high; young branches not angled, their bark rather dark. *Leaves* thinly coriaceous, lanceolate and acuminate, or ovate-lanceolate and shortly caudate-acuminate, the base acute; both surfaces shining, the lower ferruginous in some stages; midrib rather stout; main nerves rather distinct when dry, about ·1 to ·15 in. apart, the intermediate nerves almost as prominent; length 3 to 4·5 in., breadth 1 to 1·5 in., petiole

·2 to ·4 in. *Male flowers* ·25 in. in diam., in umbels of 3 to 8, on the apices of the branches, or from the axils of leaves or of fallen leaves; pedicels ·25 to ·5 in., slender. *Sepals* orbicular, fleshy, concave. *Petals* longer than the sepals, oblong, obtuse, concave. *Stamens* about 20, forming a tetragonal mass inserted on a convex receptacle, the filaments very short; anthers broad, cuneate with flat tops, 4-celled with vertical dehiscence, the connective thick; pistil 0. *Female flowers* apetalous, solitary, or in clusters of 2 to 5, axillary; *ovary* ovoid, 5 or 7-celled; stigma large, convex with a central smooth depression, bearing many black papillæ, and obscurely 5- to 7-lobed; staminodes about 8 to 10, not branched, their heads flat. *Fruit* ovoid-globose, ·5 to ·75 in. in diam., orange-coloured, pulpy, with a thick fleshy apiculous crowned by the persistent stigma. Hook. fil. Fl. Br. Ind. I, 263. Pierre Flore Forest. Coch.-Chine, fasc. VI, p. xxix, (excl. t. 81, fig. F.) *G. parvifolia*, Miq. Ann. Mus. Lugd. Bat. I, 208. *Rhinostigma parvifolium*, Miq. Fl. Ind. Bat. Supp. 495.

In all the provinces; in tropical forests. Distrib. Sumatra.

This is one of the commonest species of the genus. The pulpy fruit is eaten by the aborigines. Griff. No. 854 and Maingay Nos. 152 and 162 are the specimens on which Planchon founded the species. Griff. Nos. 865 and 867 (referred by Planchon and Triana and also by Pierre to *G. Kydiana*, Roxb.) in my opinion fall here, as also does *G. umbellifera*, Wall Cat. 4864, but Anderson reduces the latter to *G. Cowa*, Linn. Pierre's figure, (t. 81, fig. F.), which he names *S. nigro-lineata*, does not represent the flowers of the type specimens in the Calcutta Herbarium which bear the numbers which Pierre quotes. I fear therefore that there must have been some confusion in the distribution of the Griffithian collections.

It is quite possible that the description which I have given above may cover two species. The specimens with lanceolate-acuminate leaves have rather more erect and fainter nerves than these with ovate-lanceolate caudate-acuminate leaves. But, although I have dissected a large number of the male flowers of each, I cannot detect any tangible difference. Unfortunately I have been able to find very few female flowers. An examination of Miquel's type specimen of his *Rhinostigma parvifolium* leaves no doubt whatever that it is identical with Planchon's *G. nigro-lineata*.

I never find the petals reflexed: but Anderson, in Hook. fil. Fl. Br. Ind. (l. c.), describes them, and Pierre (l. c.), figures them, as reflexed from about the middle.

26. Garcinia Kunstleri, King, n. sp. A shrub, 6 to 8 (rarely 15) feet high; the young branches dark-coloured, not-angled. *Leaves* mem-

branous, oblanceolate to narrowly ovate-lanceolate, shortly but sharply acuminate, the base much narrowed; smooth on both surfaces, the lower rather pale; nerves indistinct, spreading, 9 to 13 pairs, some of the intermediate almost as distinct as the primary; length 3·5 to 5 in., breadth 1·15 to 1·8 in., petiole ·35 to ·6 in. *Male flowers* about ·15 in. in diam., in small axillary or terminal fascicles of 3 to 6. *Sepals* 4, orbicular, fleshy, concave, their edges thin. *Petals* 4, broadly ovate, blunt, fleshy, concave. *Stamens* about 15, forming a convex mass; the anthers transversely flattened, 4-celled, the connective broad; rudimentary pistil 0. *Female flowers* solitary; *sepals* 4, orbicular, membranous, veined. *Petals* 0. Staminodes 4, with filaments half as long as the ovary, and flat square heads. *Ovary* thick, cylindric, vertically grooved; the stigma convex, with large prominent black-tipped conical papillæ, and with about 10 inconspicuous lobes. *Fruit* orange-yellow, depressed, sub-globose, nearly 1·5 in. in diam., smooth, the sepals persistent at its base for some time.

Perak; at low elevations, common: King's Collector, Scortechini, Wray.

This is allied to the Burmese *G. linoceroides*, T. Anders.; but has smaller flowers, fewer stamens and more acuminate leaves.

27. Garcinia Scortechinii, King, n. sp. A tree 20 to 40 feet high; branchlets yellowish, slightly angled. *Leaves* thinly coriaceous, ovate-elliptic, occasionally ovate-lanceolate, shortly and rather bluntly acuminate, the base acute: both surfaces shining, the lower rather paler; main nerves 5 or 6 pairs, spreading, anastomising ·2 in. from the margin, very distinct on the under surface when dry, reticulations indistinct; length 2·75 to 4·75 in., breadth 1·5 to 2·5 in, petiole ·25 in. *Male flowers* ·2 in. in diam., sessile or shortly pedicellate, in clusters of 3 to 6 from small axillary tubercles; *sepals* 4, orbicular, concave, thin, veined; *petals* 4, broadly ovate, fleshy, concave; *stamens* varying from 10 to 20, inserted on a 4-angled receptacle; *anthers* with circular peltate tops, the connective in the centre the cells circumferential, dehiscing along the edge; filaments slender, shorter than the anthers; rudimentary pistil 0. *Female flowers* nearly ·5 in. in diam., axillary, solitary, sessile or shortly pedicellate. Ovary globose; stigma sessile, with large lobules, obscurely 4-lobed. *Fruit* globular, ·6 to ·75 in. in diam.; the pericarp thick, leathery; seeds about 4.

Perak, common. Malacca; Griffith (Kew Distrib. 859). Penang, Curtis, 1249.

This is not very different from *G Choisyana*, Wall. to which indeed Pierre refers the Griffithian specimen 859. But Wallich's specimens of *G. Choisyana* have leaves of so much thinner texture that, on the strength

of this character alone, the two must be kept distinct. This species is readily known by its boldly 5 to -7-nerved leaves and hard, globular, small fruit.

28. Garcinia urophylla, Scortechini MSS. A tree; the branchlets very slender, terete, yellowish. *Leaves* thinly coriaceous, ovate-lanceolate, caudate-acuminate, the base cuneate; both surfaces shining, the lower pale; nerves 4 to 5 pairs, ascending, distinct below when dry; length 2·25 to 3 in., breadth ·7 to 1·2 in., petiole ·15. *Male flowers* ·2 in. in diam., solitary or in pairs, from small bracteolate axillary tubercles: buds globose, pedicels 1 in. or less; *sepals* 4, obtuse, sub-coriaceous, concave, subequal, ovate-orbicular; *petals* 4, orbicular, almost flat, very fleshy, much thickened near the base; *stamens* about 12, in a single group, with flat circular tops, the connective in the middle, and the anther round the edge dehiscing circumferentially; filaments thick, fleshy: rudy. stigma 0. *Female flowers* axillary, solitary, sub-sessile: *sepals* and *petals* as in the male; staminodes about 6, free: *ovary* cylindric; *stigma* convex, boldly lobulate and deeply 4-cleft. *Fruit* ovoid-orbicular, ·4 in. long by ·35 in. in diam, smooth, crowned by the sessile lobulate stigma.

Perak; Scortechini Nos. 32[a], 723. Distrib. Sumatra; Beccari, No. 963.

In the size and shape of the leaves, this has a superficial resemblance to *G. rostrata*, *eugeniæfolia* and *merguensis*; but the nerves are only 4 or 5, while in these the nerves are numerous. Moreover the androecium of this is totally different.

29. Garcinia uniflora, King, n. sp. A small tree; the young branches rather stout, terete, of a dirty yellow when dry. *Leaves* ovate-oblong to elliptic-oblong, the apex abruptly shortly and sharply acuminate, the base cuneate; both surfaces dull, the lower pale and opaque; main nerves 12 to 20 pairs, thin, but rather prominent, the secondary nerves almost as distinct; length 5·5 to 7·5 in., breadth 2·5 to 4·25 in.; petiole ·75 to 1 in. thick, channelled. *Male flowers* ·75 in. in diam., solitary, sessile in the axils of fallen leaves, buds globular: *sepals* 4, sub-equal, obovate-orbicular, membranous, veined, concave; *petals* 4, orbicular, concave, fleshy, smaller than the sepals; *stamens* rather numerous, in an undivided globose mass; anthers sessile, peltate, or sub-globose with flat tops, dehiscing by a circular infra-marginal slit. *Female flowers* solitary and axillary like the males, and with a similar perianth; staminodes 0; stigma convex, deeply papillose; the ovary short, cylindric. Fruit unknown.

Perak; on Gunong Batu Puteh, at elevations of 3000 to 4000 feet, King's Collector 8081, Scortechini 364[b].

30. Garcinia dumosa, King, n. sp. A shrub 3 or 4 feet high; young

branches 4-angled, yellow. *Leaves* thinly coriaceous, ovate-lanceolate to oblong-lanceolate, shortly caudate-acuminate, the base acute; both surfaces shining, the lower pale, opaque; nerves 7 to 9 pairs, bold and prominent beneath as are some of the secondary nerves; length 4·5 to 5·5 in., breadth 1·5 to 2 in., petiole ·25 in. *Male flowers* about ·2 in. in diam. in dense 6 to 10-flowered fascicles from small minutely bracteolate axillary tubercles; buds turbinate; pedicels slender, ·1 in. or less in length; *sepals* 4, membranous, orbicular, concave; the outer pair much smaller and thicker, keeled; *petals* 4, smaller than the sepals, fleshy, orbicular, concave: *stamens* from a small receptacle; filaments short; anthers broadly reniform, the connective expanded transversely, the cells sometimes confluent, bent round it, and dehiscing along the convexity; rudy. stigma 0. *Female flowers* on axillary tubercles like the males, but fewer-flowered: *sepals* as in the male but subequal: *petals* as in the male; *staminodes* about 10, distinct, the filaments broad, the pseudanthers flat, ovate: *stigma* convex with 8 radiating ridges, its margin 8-angled; *ovary* thick, cylindric, nearly as wide as the stigma. *Fruit* (*fide* Kunstler) ovoid, pointed.

Perak; at low elevations, Wray No. 2162, King's Collector, No. 2531.

Subgenus II. Xanthochymus, Roxb. (Gen.). *Sepals* and *petals* 5, very rarely 4. *Filaments* connate in 5, rarely in 4, erect distant pedicelled spathulate bodies, antheriferous at the top, free portions very short, incurved; anthers small, didymous.

31. Garcinia Xanthochymus, Hook. fil. Fl. Br. Ind. I, 269. A medium-sized tree; the branches glabrous, angled. *Leaves* glabrous, shining; narrowly oblong or oblong-lanceolate, acute, the base cuneate; nerves numerous, not prominent; length 8 to 15 in., breadth 1·75 to 3·75 in., petiole about ·75 in. *Male flowers* ·5 to ·75 in. in diam., in 4-10-flowered fascicles, axillary or from the axils of fallen leaves, greenish-white; pedicels stout, ·5 to 1 in. long. *Sepals* ·25 in. in diam., orbicular, unequal, fleshy, concave. *Petals* ·35 in., orbicular, spreading, thin. *Stamens* in 5 broad bundles of 3 to 5, alternating with 5 fleshy glands: anthers 2-celled. *Hermaph. flower* like the male, the pedicels 2 or 3 times as long. *Ovary* ovoid, pointed, usually 5-celled; *stigma* with 5, spreading, oblong blunt lobes. *Ripe fruit* globose, pointed, 2·5 in. in diam., dark yellow. *Seeds* 1 to 4, oblong. Kurz For. Flora Burma i, 93; Pierre Flore Forest. Cochin-Chine, fasc. VI, p. iii, t. 21 A. *Xanthochymus pictorius*, Roxb. Corom. Pl. ii, 51, t. 196; Fl. Ind. ii, 633. *X. tinctorius*, DC. Prodr. i, 562; Chois. Guttif. Ind. 32; Planch. and Triana Mem. Guttif. 149; W. and A. Prodr. 102; Wall. Cat. 4837, except C.

Andamans, Penang. Distrib. Burmah and Chittagong, base of E. Himalaya and Assam, S. India up to 1500 feet.

Sheet C of No. 4837 of Wall. Cat. (said to have been collected in Penang) does not in my opinion belong to this species. Its leaves have too few nerves.

32. GARCINIA NERVOSA, Miq. Ann. Mus. Lugd. Bat. I, 208. A tree 40 to 80 feet high: young branches stout, compressed, 4-angled, 2 of the angles winged. *Leaves* large, glabrous, very coriaceous, oblong-oblanceolate or oblong-ovate, sub-acute or obtuse, slightly narrowed below to the rounded or minutely cordate base; upper surface shining; the lower dull, pale; main nerves bold, numerous, anastomising ·1 in. within the margin with the bold intra-marginal nerve: secondary nerves and reticulations rather prominent: length 9 to 20 in., breadth 3·5 to 7 in., petiole 1·25 in. *Male flowers* unknown. *Female flowers* ·75 in. in diam., in axillary fascicles of 8 to 10; pedicels thickened upwards, 1 to 1·25 in. long, (longer in the fruit). *Sepals* 5, unequal, orbicular, much imbricate and very concave, very coriaceous, pubescent externally. *Petals* 5, much larger than the sepals, orbicular, concave, thin. Disk of 5 thick, fleshy, pitted glands with 5 minute staminodes between them each bearing 4-5 minute anthers. *Ovary* ovoid, narrowed into a distinct 5-rayed style, 5-celled. *Ripe fruit* ovoid or obovoid, yellow with red blotches, 2 in. long and 1·5 in. in diam., with a large eccentric mammilla crowned by the persistent 5-lobed stigma. *Seeds* about 2, elongate-ovoid. *G. Andersoni*, Hook. fil. Fl. Br. Ind. I, 270, 715; *Stalagmites? nervosa*, Miq. Fl. Ind. Bat. Suppl. 496.

Perak; King's Collector 10491, Scortechini. Malacca; Maingay (Kew Distrib. 157). Distrib. Sumatra.

Var. *pubescens*. *Leaves* densely and minutely pubescent below, cordate and slightly unequal at the base, 15 to 24 in. long, the edges recurved when dry; petiole triquetrous, very stout. Fruit bright yellow, 3 in. long, 2 in. in diam., the mammilla about ·75 in.

Perak: King's collector, No. 3197.

This may be separable as a species when further material shall be forthcoming. Male flowers are unknown.

33. GARCINIA DULCIS, Kurz For. Flora Burmah I, 92. A tree 30 to 40 feet high: the young branches 4-angled, pale yellow. *Leaves* oblong to ovate-oblong, with an abrupt short sharp point, the base rounded or slightly narrowed; upper surface shining, the lower slightly pale and dull when dry, the midrib rather prominent on both; main nerves about 10 pairs, interarching near the margin, not much more prominent than the intermediate nerves; length 5 to 10 in., breadth 1·75 to 4·5 in.; petiole ·4 to ·6 in., stout. *Flowers* globular, hardly expanding, about ·25 in. in diam., male and hermaphrodite mixed in dense many-flowered fascicles from small tubercles in the axils of the leaves or of the fallen

leaves; pedicels ·25 to ·35 in., *sepals* 4 to 6, usually 5, orbicular, unequal, fleshy, concave, the 3 outer smaller. *Petals* usually 5, larger than the sepals, orbicular, fleshy, concave; *Stamens* about 40, in 5, pedicelled, fan-shaped groups; filaments short, thick; anthers sub-globular, 2-celled, with sutural dehiscence; disk in the male depressed, truncate, corrugated, fleshy; in the female with 5 lobes which alternate with the staminal groups. *Stigma* in the male absent; in the hermaphrodite 5-rayed, the ovary ovoid-globular. *Fruit* 2·5 in. long, from globular to pear-shaped, pedunculate, smooth, yellow, with much sweet pulp; seeds 1 to 5, oblong, pointed; pedicels 1 in. Pierre Flor. Forest. Cochin-Chine, fasc. VI, p. iv. *Xanthochymus dulcis*, Roxb. Cor. Pl. t. 270; Wight Ic. 270; Bot. Mag. 3088; Choisy Gutt. Ind. 32; Planch. and Triana Mem. Guttif. 149. *Garcinia elliptica*, Choisy in DC. Prod. i, 561 (not of Wall. Cat.) *X. Javensis*, Blume Bijdr. 216; *Stalagmites dulcis*, Cambess. Mem. Mus. xvi. 392, 425; Miq. Fl Ind. Bat. I, Pt. 2, 508; Hassk. Pl. Jav. Rar. 275.

Perak; King's Collector No. 5750. Distrib. Malayan Archipelago.

34. Garcinia Andamanica, King, n. sp. A tree from 20 to 40 feet high; young branches 4-angled, pubescent. *Leaves* elongate-ovate, often inequilateral, sub-acute; the base broad, rounded or slightly cordate; both surfaces glabrous, shining; main nerves 14 to 16 pairs, rather prominent; length 8 to 11 in., breadth 4 to 5·5; petiole ·5 in., stout. *Male flowers* about ·3 in. in diam., in short dense axillary fascicles from short wart-like branches. *Sepals* 5, coriaceous, ovate-rotund, imbricate, pubescent externally. *Petals* 5, larger than the sepals, thin, rotund, clawed, imbricate, glabrous. *Stamens* indefinite, in 5 thick fleshy bundles; anthers minute, sub-globular, introrse. *Disk* of 5 broad corrugated glands much shorter than the bundles of stamens and alternating with them. *Pistil* 0. *Female flower* unknown. *Fruit* globular or oval, smooth, bright yellow, 1 to 1·5 in. long and ·75 to 1·25 in. in diam., shortly apiculate; the 5-lobed stigma persistent. *G. dulcis*, Kurz (not of Roxb.) For. Flora Burma i, 92; Pierre Fl. Forest. Cochin-Chine, fasc. vi, p. VI, *in part.*

Andaman Islands; Helfer No. 872, Kurz, King's Collector, No. 224.

Var. *pubescens*, leaves shortly pubescent beneath, the base cuneate.

Andamans; King's Collector, No. 136.

This species was considered by Kurz to be identical with *Xanthochymus dulcis*, Roxb., a native of the Moluccas cultivated in the Botanical Gardens, Calcutta. It does not, however, agree with specimens still in cultivation there, nor with Roxburgh's description. Pierre (l. c.) expresses his doubt as to the identity of the Andaman and Molucca plants:

but he adopts Kurz's name for the latter. The variety named above *pubescens* may turn out to be a distinct species. At present only fruiting specimens of it are known. This species is closely allied to *G. Villersiana*, Pierre, a common Cambodian plant. The leaves of the latter, as shown in Pierre's figure (Fl. Forest Cochin-Chine, t. 21) have however more nerves; the flowers have longer pedicels, and the staminal bundles are longer and more slender than in this species: the lobes of the disk are also narrower and longer.

This is the Helferian plant referred to under *G. Xanthochymus* in Fl. Br. Ind. i, 269, as allied to, but differing from that species.

35. GARCINIA DENSIFLORA, King, n. sp. A tree 60 to 80 feet high: young branches stout, 4-angled, brown when dry. *Leaves* thickly coriaceous, broadly elliptic to elliptic-oblong, sub-acute or rather blunt, the base cuneate; both surfaces shining; the midrib stout: nerves 10 to 12 pairs, sub-horizontal, anastomising by arches ·1 in. from the margin; length 4·5 to 6 in., breadth 2·5 to 3·75 in.; petiole ·6 in., thick, deeply channelled. *Male flowers* ·35 in. in diam., in large dense many-flowered clusters 1 to 1·5 in. in diam., on bracteolate tubercles from the axils of the fallen leaves; buds globose; pedicels unequal, from ·2 to ·35 in. long: *sepals* 5, the 3 outer smaller than the inner 2, orbicular, fleshy, concave, puberulous externally, the margins ciliolate; the inner 2 as large as the petals, glabrous, the margins ciliolate; *petals* 5, fleshy, orbicular, concave, yellow; *stamens* in 5 pedicelled, fan-shaped branches of about 12: filaments thick, fleshy; anthers with 2 orbicular, suturally dehiscent, cells: *Disk* large, fleshy, much corrugated, with 5 radiating lobes which alternate with the staminal groups; *rudy. style* cylindric, corrugated; the stigma oblong, smooth, small. *Female flower* and *fruit* unknown.

Perak; at elevations under 1000 feet, King's Collector, No. 5933.

A very distinct species collected only once.

36. GARCINIA PRAINIANA, King n. sp. A small tree: young branches terete or compressed, not angled, pale yellowish. *Leaves* more or less broadly elliptic-oblong, narrowed to the rounded or slightly cordate base, shining on both surfaces; nerves 12 to 15 pairs, spreading, interarching submarginally, rather prominent beneath when dry; intermediate nerves prominent, bifurcating; the midrib stout; length 4·5 to 9 in., breadth 1·75 to 4 in.; petiole ·25 in., stout. *Male flowers* ·4 in. in diam., in dense, 6 to 12-flowered, bracteate, terminal cymes; bracts numerous, lanceolate, fleshy, keeled; pedicels thick, flat; *sepals* 5, fleshy, concave, orbicular; *petals* 5, darker in colour than the sepals, fleshy, concave, sub-orbicular: *stamens* numerous, in a 5-lobed annulus round the globose rudimentary ovary, 2-celled, with sutural dehiscence. *Female flowers* unknown. *Fruit* (young 1·3 in diam.) globular, pulpy, smooth, crowned

by the sessile smooth concave stigma: the sepals persistent at its base, coriaceous, concave, about ·5 in. long.

Perak; at Kwala Dynong, Scortechini, No. 1796.

Doubtful Species.

Garcinia Jelinekii, Kurz MSS. in Herb. Hort. Calc. A specimen with leaves like a *Garcinia* and detached fruit of a true *Garcinia* (No. 169 Exped. *Novara*), collected in the Nicobars by Dr. Jelinek, has been thus named in the Calcutta Herbarium. The material is too imperfect to be dealt with.

2. Calophyllum, Linn.

Trees. *Leaves* opposite, shining, coriaceous, with innumerable parallel slender veins at right angles to the midrib. *Flowers* polygamous, in numerous axillary or terminal panicles. *Sepals* and *petals* 4-12, imbricate in 2-3 series. *Stamens* very many, filaments filiform, often flexuous, free or connate below; anthers erect, 2-celled, dehiscence vertical. *Ovary* 1-celled; style slender, stigma peltate; ovule solitary, erect. *Drupe* with a crustaceous putamen. *Seed* erect, ovoid or globose; testa thin, or thick and spongy. Distrib. About 35 species, chiefly tropical Asiatic with a few American.

Series A. Sepals 4. Petals 0. (*Apoterium*, Bl.).

Flowers axillary, solitary or in pairs ... 1. *C. microphyllum.*
Flowers in axillary fascicles ... ... 2. *C. Kunstleri.*
Flowers in axillary racemes.
  Glabrous everywhere.
    Leaves less than 5 in. long.
      Leaves ovate or obovate-lanceolate, pedicels 2 or more times as long as the flowers; fruit ovoid ... ... 3. *pulcherrimum.*
      Leaves elliptic-oblong, pedicels as long as flowers, fruit yellowish: young branches yellowish ... 4. *Prainianum.*
      Leaves elliptic-lanceolate, pedicels not exceeding flowers, racemes very numerous: young branches brown ... ... 5. *floribundum.*
    Leaves more than 5 in. long ... 6. *spectabile.*
  Apices of young branches, petioles and inflorescence ferruginous-pubescent.

Leaves thinly coriaceous, lanceolate or oblong-lanceolate; outer sepals oblong: fruit globose or sub-ovoid; racemes not bracteate ... 7. *amœnum.*

Leaves coriaceous, ovate to ovate-elliptic: outer sepals obovate, clawed: fruit globose; racemes not bracteate ... ... 8. *retusum.*

Leaves coriaceous, narrowly elliptic, blunt or retuse; racemes bracteate at base: fruit globose ... 9. *Curtisii.*

Young parts and leaves, except when very old, softly ferruginous-tomentose 10. *molle.*

Flowers in terminal panicles ... ... 11. *canum.*

SERIES B. SEPALS 4. PETALS 4 OR MORE.

Leaves elliptic, rarely obovate, blunt or emarginate, thinly coriaceous, fruit spherical ... 12. *Inophyllum.*

Leaves obovate, retuse or emarginate, thickly coriaceous, fruit ovoid ... ... 13. *Inopylloide.*

Leaves oblong, acuminate.

Young leaves and inflorescence rufous... 14. *Wallichianum.*

All parts glabrous.

Leaves 4 to 6 in. long, flowers ·35 in. in diam. Petals 4 ... 15. *Griffithii.*

Leaves 5 to 10 in. long; flowers 1 in. in diam. Petals 4. Fruit 5 in. long ... ... 16. *macrocarpum.*

Leaves 1·75 to 3 in. long: flowers ·5 in. in diam. Petals 4 to 6 ... 17. *venustum.*

1. CALOPHYLLUM MICROPHYLLUM, T. Anders. in Hook. Fl. Br. Ind. i, 272. A glabrous, much branched, very leafy shrub; youngest branches 4-angled. *Leaves* rigidly coriaceous, obovate-cuneate or obovate, obtuse or retuse, much narrowed to the base; nerves slightly and equally prominent on both surfaces; length ·75 to 1·5 in., breadth ·35 to 75 in., petiole ·1 to ·2 in. *Flowers* solitary or in pairs in the axils of the younger leaves, minute; pedicels ·15 to ·25 in., slender, recurved, with 2 bracts at the base. *Sepals* sub-orbicular. *Fruit* pisiform, topped by remains of style.

Mount Ophir, near the summit.

The leaves are not unlike those of *C. floribundum*, but the inflorescence is quite different.

2. Calophyllum Kunstleri, King, n. sp. A tree 40 to 60 feet high, all parts glabrous except the buds, the 4-angled young branches, and the petioles and lower part of rachis of inflorescence with its bracts which are ferruginous-pubescent. *Leaves* thinly coriaceous, narrowly elliptic-oblong, the apex obtusely acuminate, tapering in the lower third to the short stout petiole; both surfaces shining; the nerves very close together and like the midrib most distinct on the lower; length 3·5 to 5 in., breadth 1·25 to 1·4 in., petiole ·3 to ·4 in. Flowers in solitary fascicles from the axils of the older or of fallen leaves, about 1·5 in. long, 3-4-flowered; bracts at base of pedicel 4, ovate, boat-shaped. *Flowers* ·25 in. in diam.; the pedicels often very unequal, the uppermost 1 in. and about twice as long as the lower. *Sepals* 4, the outer pair obovate-oblong, the inner oblong, all obtuse. *Petals* 0. *Fruit*, (not ripe) ovoid or globular, glabrous; pericarp thick, crustaceous.

Perak; King's Collector, Nos. 5328, 5374, 5459.

A common species; varying a little as to the amount of pubescence on the branchlets and buds, and in the form of the fruit. Ripe fruit has not, however, yet been collected; and it may prove than when ripe the fruit is uniformly globular. The nervation is closer than in any other species that I have seen, and the surfaces of the leaves have a peculiarly lustrous sheen.

3. Calophyllum pulcherrimum, Wall. Cat. 4848. A glabrous tree, 20 to 60 feet high; the young branches as thick as a crow-quill, 4-angled. *Leaves* thinly coriaceous, ovate or obovate-lanceolate, shortly and obtusely acuminate, much narrowed to the base; both surfaces shining; the edge a little thickened and undulate, the midrib stout; length 1·75 to 2·5 in., breadth ·8 to 1·2 in., petiole ·3 in. *Racemes* solitary, about half as long as the leaves, from the axils of the older leaves, lax, spreading, few-flowered. *Flowers* ·25 in. in diam.; pedicels very slender, about ·5 in. long. *Sepals* broadly ovate, the inner pair slightly larger and more membranous. *Ovary* globose. *Fruit* ovoid with a very short beak, ·65 in. long. Chois. Guttif. Ind. 14; Planch. and Triana Mem. Guttif. 246; Hook. fil. Fl. Br. Ind. i, 271; Pierre Fl. Coch.-Chine, t. 104.

Singapore. Malacca. Perak. Distrib. Cochin-China.

Miquel's three species *bancanum*, *plicipes* and *gracile* are reduced to this in Hooker's Fl. Br. Ind. Miquel ascribes 4 petals to *gracile*, which would throw it into another section. Pierre (l. c.) expresses doubts as to *bancanum* and *gracile* falling here, and considers *C. plicipes* as totally distinct both as to leaves and flowers. Of *C. mesuaefolium*, (Wall. Cat. 4850,) only fragmentary specimens exist. In the Fl. Br. Ind. it is reduced here; but Planchon and Triana consider it quite different.

Var. *oblongifolium*, T. Anderson (in Hook fil. Fl. Br. Ind. l. c.); leaves oblong, tip rounded.

4. CALOPHYLLUM PRAINIANUM, King, n. sp. A glabrous tree 40 to 60 feet high; the youngest branchlets polished, terete, yellowish. *Leaves* thinly coriaceous, elliptic-oblong, shortly sub-abruptly and obtusely acuminate, narrowed in the lower third to the short petiole; the nerves rather distinct on both surfaces; lower surface paler than upper, both shining; the edge pale yellow, very slightly thickened; length 2·5 to 4 in., breadth 1 to 1·5 in., petiole 2·5 to 4 in. *Racemes* solitary, axillary, rarely supra-axillary, about 1·5 in. long, ebracteate, lax, few-flowered. *Flowers* ·25 in. in diam.; pedicels slender, ·25 in., the upper rather longer. *Sepals* 4; the outer pair orbicular, concave, puberulous externally; the inner pair larger, imbricate, orbicular-oblong, glabrous. *Ovary* ovoid, stigma very broad. *Fruit* spherical, ·4 in. in diam., crowned by the thin style, pericarp thin.

Perak; King's Collector, Nos. 5366 and 7243.

Very like *C. pulcherrimum*, but with globular fruit: also like *C. Teysmannii*, but the nervation of the leaves in that species is unusually oblique for the genus, whereas in this the nerves are almost horizontal.

5. CALOPHYLLUM FLORIBUNDUM, Hook. fil. Fl. Br. Ind. I, 272. A tree? much branched and everywhere glabrous; branchlets glaucous, 4-angled, as thick as a crow-quill. *Leaves* coriaceous, elliptic-lanceolate, obtusely acuminate, the edges thickened and pale, the base acuminate, the numerous nerves and midrib most distinct on the under sub-glaucescent surface, upper surface shining; length 1·24 to 1·5 in., breadth ·5 to ·6 in., petiole ·25 in. *Racemes* from most of the leaf-axils erecto-patent, more than half as long as the leaves; pedicels opposite, spreading, not much longer than the diameter of the flowers. Flowers ·25 in. in diam. The outer pair of *sepals* broadly ovate, sub-acute, the inner broadly obovate, blunt, membranous. *Stamens* numerous, style not longer than the sepals.

Malacca; Maingay, Nos. 170, 171.

This is closely allied to *C. pulcherrimum*, Wall., but has smaller leaves, the racemes are more numerous and longer in proportion to the leaves, while the pedicels of individual flowers are much shorter.

6. CALOPHYLLUM SPECTABILE, Willd. A tall tree; when adult all parts glabrous, the buds and young parts ferruginous-pubescent. *Leaves* thinly coriaceous, narrowly or broadly oblong, rarely elliptic, sub-acute or obtuse, undulate, the base cuneate; both surfaces shining, the nerves very numerous, the midrib strong; length 6 to 12 in., breadth 1·5 to 3 in., petiole ·5 to ·75 in. *Racemes* umbelliform, axillary, solitary, lax, few-flowered, ·5 in. in diam.; pedicels slender, ·5 in. *Sepals* orbicular, glabrous. *Ripe fruit* spherical, ·75 in. in diam. DC. Prod. i, 562; Choisy Guttif. Ind. 43, in part; Planch. and Triana Mem. Guttif. 238; Wight Ill. i, 128; Miq. Fl. Ind. Bat. i, Pt. 2, 510; Pierre Fl. Coch.-Chine, t.

107; Kurz Fl. Burm. i, 94; *C. tetrapetalum*, Roxb. Fl. Ind. ii, 608; *C. Moonii*, Wight Ill. i, 129, Ic. t. 111; Thw. Enum. 52; Beddome Flor. Sylvat. Gen. xxii; *C. cymosum*, Miquel Fl. Ind. Bat. Suppl. i, 497; *C. Diepenhorstii*, Miq. l. c. 497; *C. hirtellum*, Miq. Pl. Jungh. i, 291; Fl. Ind. Bat. I, Pt. 2, 511; *Apoterium Sulatri*, Bl. Bijdr. 218.

Penang, Singapore, Andamans, Nicobars. Distrib. Malayan Archipelago, Cochin-China, Fiji, Society Islands.

7. Calophyllum amoenum, Wall. Cat. 4849. A tree 20 to 40 feet high; the apices of the youngest branches, the buds, the leaf-petioles, and the rachides of the racemes minutely ferruginous or griseous-pubescent. *Leaves* thinly coriaceous, lanceolate or oblong-lanceolate, rarely ovate-lanceolate or obovate-elliptic, acute or very shortly and obtusely acuminate, the base cuneate; nerves very close, about equally prominent on both surfaces; length 2·5 to 3·5 in., breadth 1 to 1·5 in., petiole ·4 in. *Racemes* stout, sub-erect, shorter than the leaves, few-flowered. *Flowers* ·25 in. in diam., pedicels ·2 in. *Sepals* reflexed, the outer pair oblong, ferruginous-tomentose externally: the inner pair longer, sub-glabrous. *Fruit* globose or sub-ovoid, ·3 in. long, the pericarp pulpy. Choisy Guttif. de l'Inde, 41; Planch. and Triana Mem. Guttif. 235; Kurz Fl. Burm. i, 95.

Andamans; King's Collector. Tenasserim, Helfer, No. 881; Amherst Wallich, No. 4849.

None of the Andaman specimens which I have seen are in fruit; and none of the Burmese are in flower. But in leaf and other characters the specimens are alike. The species seems to me a good one and to be distinct from *C. retusum*, Wall., with which it has however been united in Fl. Br. Ind., and this is also the opinion of Planchon and Triana.

8. Calophyllum retusum, Wall. Cat. 4846. A much-branched, very leafy shrub; the young branches 4-angled, softly ferruginous-pubescent, as are the petioles and inflorescence. *Leaves* coriaceous, ovate to ovate-elliptic, obtuse, the base rounded or slightly narrowed; nerves rather distant for the genus, more visible on the upper than on the lower surface; length 1·75 to 2·25 in., breadth ·8 to 1·1 in.; petiole ·2 in. stout, pubescent, when old glabrous. *Racemes* solitary, axillary, sub-erect, ferruginous-pubescent, especially at the base, 1 in. long. *Flowers* ·25 in. in diam., pedicels ·2 in. *Sepals;* the outer obovate, clawed; the inner ovate-oblong. *Fruit* pisiform. Pierre Fl. Coch.-Chine, t. 102; *C. pisiferum*, Planch. and Triana Mem. Guttif. 266; *C. retusum*, Hook. fil. Fl. Br. Ind. i, 272, (excl. syn. *C. amœnum*, Wall.).

Malacca; Griffith, Maingay (Kew Distrib. No. 166). Singapore; Wallich, No. 4846.

9. Calophyllum Curtisii, King, n. sp. A tree; the young branches,

buds, petioles and inflorescence ferruginous-pubescent, sub-pulverulent. *Leaves* coriaceous, narrowly elliptic, blunt or retuse, the base narrowed; upper surface glabrous, shining; the lower rather dull, pubescent on the prominent midrib; the nerves rather distinct on both surfaces; length 2 to 2·75 in., breadth 1 to 1·4 in., petiole ·4 in. *Racemes* solitary or two together, axillary, umbellate, compact, 3 to 5-flowered, ferruginous-tomentose, much shorter than the leaves and with several navicular ferruginous-tomentose bracts at their base. *Flowers* ·25 in. in diam., the pedicels ·2 long, more than twice as long in fruit, and the uppermost the longest. Sepals 4; the outer oblong, sub-obovate, ferruginous-tomentose; the inner smaller, oblong, sub-glabrous. Petals 0. Fruit ovoid.

Penang; on Government Hill, at 500 feet, Curtis, No. 523.

A very distinct species ripe fruit of which is unknown.

10. Calophyllum molle, King, n. sp. A tree 40 to 80 feet high; the young shoots, buds, under surfaces of adult leaves, and young fruit softly ferruginous-tomentose. *Leaves* coriaceous, narrowly oblong, gradually narrowed in the upper fourth to the sub-obtuse apex, the edges thickened and slightly recurved, the base rounded, or slightly narrowed: upper surface when adult sub-glabrous, the nerves close, slightly visible, the midrib sparsely and coarsely pubescent; lower surface pale and, except when very old, more or less softly tomentose especially on the very stout midrib: length 5 to 8 in., breadth 1·25 to 2·25 in., petiole ·4 in. to ·6 in. *Racemes* axillary, solitary, about 1 in. long, 1 to 2-flowered, densely ferruginous-tomentose as are the ovary and young fruit. *Sepals* 4, the outer oblong, ferruginous-tomentose externally. *Petals* 0. *Fruit* globular, slightly apiculate, 1 in. long, sub-glabrous when ripe.

Penang; Curtis, No. 1426. Perak; King's Collector, many numbers.

A species collected by Sig. Beccari in Sumatra (P. S. 953) comes very near this; but the leaves are broader and more inclined to be oblanceolate, the thickening of the edge is greater and is pale in colour, while the young fruit is ovoid and not tomentose. Judging from Pierre's figure (he gives no description) of his *C. Dongnaiense*, Fl. Coch.-Chine, t. 108, that species and this must be near allies.

11. Calophyllum canum, Hook. fil. Fl. Br. Ind. i, 271. A tree 40 to 80 feet high; young branchlets as thick as a goose-quill, smooth. *Leaves* coriaceous, glabrous, narrowly elliptic-oblong, bluntly and shortly acuminate, slightly undulate, the base acute, upper surface shining, the lower less so; midrib very strong, nerves very thin and numerous; length 5 to 7 in., breadth 1·75 to 2·25 in., petiole ·5 to ·75 in. *Flowers* ·75 in., diam., in terminal hoary-pubescent panicles less than half as long as the leaves, or in axillary racemes, pedicels ·15 in. *Sepals* hoary-puberulous, orbicular; the outer pair coriaceous, concave; the inner pair larger and

thinner, imbricate, the upper edge incurved, ciliate. *Petals* 0. Stamens very numerous. *Stigma* discoid. *Ovary* depressed-spherical, glabrous. *Fruit* ovoid, smooth, ·75 in. long.

Malacca; Maingay. Perak; King's Collector No. 5420, Scortechini No. 2044. Penang; Curtis, No. 1543. Distrib. Cochin-China, British India.

Not unlike *C. Wallichianum*, Planch. and Triana; but apetalous and the leaves never tomentose.

12. Calophyllum Inophyllum, Linn. sp. 732. A glabrous tree 20 to 30 feet high: young branches stout. *Leaves* thinly coriaceous, elliptic, rarely obovate-oblong, apex rounded or emarginate, the base acute, shining on both surfaces; length 4 to 6 in., breadth 2·5 to 3·5 in., petiole ·75 in. broad. *Racemes* in the upper axils, lax, 3 to 4 in. long, few-flowered. *Flowers* ·75 in. in diam.; pedicels slender, 1 to 1·75 in. *Sepals* 4, the 2 inner petaloid. *Petals* 4, longer than the sepals. *Filaments* 4-delphous. *Ovary* stipitate, globose. *Style* longer than the stamens; stigma peltate, lobed. *Fruit* globular; the pericarp smooth, fleshy, 1 in. in diam. or more. DC. Prod. I, 562. Bl. Bijdr. 217. Chois. Guttif. Ind. 42. Planch. and Triana Mem. Guttif. 254. Roxb. Fl. Ind. ii, 606. W. and A. Prod. 103. Miq. Fl. Ind. Bat. I, pt. 2, p. 510. Wight Ill. i, 128; Ic. 77. Hook. Fl. B. Ind. i, 273. Kurz Fl. Burm. i, 95. *C. Blumei*, Wight Ill. i, 128. *C. Bintagor*, Roxb. Fl. Ind. ii, 607. (?)

On the Coasts, in all the Provinces. Distrib. Burmah, S. India and Ceylon, E. African Islands, Australia, Polynesia.

The pure white flowers are delightfully fragrant, the seeds yield a beautiful mild oil, and the wood is useful for spars of boats and ships.

13. Calophyllum Inophylloide, King, n. sp. A glabrous tree, 60 to 80 feet high; the young branches about as thick as a goose-quill, dark brown. *Leaves* thickly coriaceous, obovate or obovate-oblong, the apex retuse or emarginate, the edges thickened, recurved (when dry), gradually narrowed from about the middle to the stout petiole; both surfaces shining, the lower less so and paler; nerves very numerous, little prominent, the midrib stout; length 3·25 to 4·5 in., breadth 1·75 to 2·75 in.; petiole ·6 to ·1 in., broad at the apex. *Racemes* from the axils of the upper leaves, 2 to 3 in. long, lax, few-flowered. *Flowers* globular in bud, about ·75 in. in diam. when expanded. *Outer sepals* rotund, concave, reflexed, 4 in. long; the inner petaloid, larger than the outer. Petals narrower than the sepals: pedicels slender, ·65 to 1 in. long. *Style* stout; stigma broad, discoid. *Fruit* (not quite ripe) ovoid, ·75 in. long, the pericarp not pulpy.

Perak; on low Hills, elevation 300 to 500 feet.

The leaves of this much resemble those of *C. Inophyllum*, but they

are thicker, smaller, and invariably obovate and retuse. The flowers are smaller than those of *C. Inophyllum;* the fruit also differs in being smaller, ovoid and not pulpy. This species also resembles the British Indian *C. Wightianum*, Wall. The existence of petals is certain, but the condition of the flowers on the only specimens hitherto collected is such that their number cannot be made out with certainty.

14. CALLOPHYLLUM WALLICHIANUM, Planch. and Triana Mem. Gutt. 249. A tree; the branchlets pale yellowish, the youngest 4-angled and, with the buds under surface of young leaves and inflorescence, minutely ferruginous-tomentose. *Leaves* thinly coriaceous, narrowly elliptic-oblong, the apex shortly and obtusely acuminate, the base acute; upper surface shining, the midrib narrow; lower surface dull, the midrib prominent, at first minutely ferruginous-tomentose, when adult glabrous: length 4·5 to 6 in., breadth 1·5 in.; petiole ·75 in., rusty. *Racemes* axillary and terminal, less than half as long as the leaves, ferruginous-tomentose, erecto-patent. *Flowers* ·5 in. in diam., pedicels ·2 in. *Sepals* 4, orbicular, ferruginous-tomentose on both surfaces. *Petals* 4, cuneate-oblong, glabrous internally. Fruit (*fide* F. B. Ind.) globose, the size of a cherry. Wall. Cat. No. 4843, in part. Hook. fil. Fl. Br. Ind. i, 273.

Malacca; Maingay.

This species was founded by Planchon and Triana on a specimen mixed with Wall. Cat. No. 4843, (the bulk of which is *C. spectabile*, Willd.) This does not appear to be a common species, and its fruit I have not seen. It may be readily distinguished by its yellow branches, the pale ferruginous, almost cinnamoneous, colour of its leaves when dry, and its darkly rusty racemes.

15. CALOPHYLLUM GRIFFITHII, T. Anders. in Hook. Fl. Br. Ind. i, 273. A glabrous tree, the youngest shoots 4-sided. *Leaves* thinly coriaceous, oblong or elliptic-oblong, acute or obtuse, the base shortly cuneate, shining on both surfaces, the rather distant nerves equally distinct on both, the midrib more distinct and pale-coloured on the lower; the edges with a pale thickening; length 4 to 6 in., breadth 1·75 to 2 in., petiole ·4 to ·6 in. *Racemes* solitary, axillary, from 1·5 to 2·5 in. long, few-flowered. *Flowers* ·35 in. in diam., glabrous; pedicels unequal, ·2 to ·5 in. long, slender, each with a small deciduous bract at its base. *Sepals* 4, outer pair orbicular, inner pair longer but narrower. *Petals* 4, oblong, obtuse. *Fruit* (young) ovoid, smooth.

Malacca; Griffith. Distrib. Sumatra, Forbes, No. 322*a*.

16. CALOPHYLLUM MACROCARPUM, Hook. fil. Fl. Br. Ind. I, 273. A glabrous tree; branchlets polished, sharply 4-angled. *Leaves* coriaceous, narrowly oblong or elliptic-lanceolate, shortly and obtusely acuminate,

much narrowed at the base, edge slightly thickened, upper surface shining, the midrib prominent on the rather dull lower surface, nerves rather bold and equally prominent on both; length 5 to 10 in., breadth 2 to 3 in., petiole 1 to 1·25 in. *Racemes* not half the length of the leaves, axillary, solitary, 6-10 flowered, minutely ferruginous-puberulous. *Flowers* 1 in. in diam.; pedicels 1 to 1·25 in. *Sepals* 4, the outer pair puberulous externally; the inner pair larger, imbricate, oblong-rotund, orbicular, concave, rusty, obtuse, petaloid. *Petals* 4, smaller than the inner sepals, oblanceolate, clawed. *Stamens* short. *Fruit* (*fide* Maingay) ellipsoid, 5 in. long.

Malacca; Maingay (Kew Distrib. 174). Perak; King's Collector, No. 8851.

17. Calophyllum venustum, King, n. sp A glabrous tree, 20 to 30 feet high. *Leaves* thinly coriaceous, shining, rigid, elliptic-ovate, retuse, the base cuneate, the margin thickened; nerves rather distant for the genus and equally distinct on both surfaces; length 1·75 to 3 in., breadth 1 to 1·5 in., petiole ·3 to ·4 in. *Racemes* 3-5 flowered, solitary, axillary, half as long as the leaves, very lax, spreading. *Flowers* large (·5 in. in diam.), on long (·75 in.) pedicels; buds ovoid. *Sepals* 4, more or less orbicular. *Petals* 4 to 6, narrower than the sepals, the inner oblong, veined, all obtuse. *Fruit* unknown.

Perak; King's Collector, No. 7763.

A very handsome species of which the fruit is unknown. In leaf it resembles *C. amœnum*, but differs greatly in the flowers.

3. Kayea, Wall.

Trees. *Leaves* opposite; veins rather distant, arched. *Flowers* hermaphrodite, either large and solitary, or small and collected in terminal panicles. *Sepals* and *petals* 4 each, imbricate. *Stamens* numerous, filaments slender, free or connate at the base; anthers small, subglobose, 2-celled, dehiscence vertical. *Ovary* 1-celled; style slender, stigma acutely 4-fid; ovules 4, erect. *Fruit* subdrupaceous, fleshy, indehiscent, 1-4-seeded. *Seeds* thick, testa thin and crustaceous.—Distrib. Tropical Asia, 7 species.

Flowers in racemes.

Racemes 2 to 3 in. long: flowers 1 in. or more in diam. ... ... 1. *K. Wrayi.*

Racemes less than 1 in. long: flowers less than 1 in. in diam. ... 2. *K. racemosa.*

Flowers solitary, axillary.

Nervation of leaves bold, distinct.

Fruit turbinate, quite enveloped by the outer sepals when ripe ... 3. *K. grandis.*
Fruit ovoid, pointed, only partly covered by sepals.
Leaves tapering to the moderately long petiole ... 4. *K. Kunstleri.*
Leaves rounded or cordate at base, sub-sessile ... 5. *K. nervosa.*
Fruit ovoid with a much elongate hooked apex, leaves caudate-acuminate ... ... 6. *K. caudata.*
Nervation of leaves indistinct.
Young branches slender, smooth, flowers axillary ... ... 7. *K. elegans.*

1. KAYEA WRAYI, King, n. sp. A small glabrous tree; the young branches pale, polished, terete, often whorled. *Leaves* very thickly coriaceous, broadly elliptic, acute or acuminate, the edges much recurved when dry, the base rounded; nerves about 15 pairs, unequal, only slightly prominent on the lower and less so on the upper surface; both surfaces smooth, the upper shining, the lower dull; length 3 to 4·5 in., breadth 1·75 to 2·25 in.; petiole ·4 in., thick. *Racemes* axillary or terminal, 2 to 3 in. long, sub-erect, stout, with minute subulate bracts at the base, 3 to 5-flowered. *Flowers* 1 to 1·25 in. in diam., pedicels ·5 to 1·25 in. long. *Sepals* orbicular, nearly equal, glabrous, the outer pair coriaceous, the inner thinner. *Petals* much larger than the sepals, broadly-obovate or orbicular, clawed. *Stamens* much shorter than the petals. *Fruit* unknown.

Pahang; on Gunong Brumber, elevation 7000 feet, L. Wray, junior.

A remarkable species quite unlike any hitherto described.

2. KAYEA RACEMOSA, Planch. and Triana Mem. Guttif. 269. A glabrous tree, 40 to 60 feet high. *Leaves* sub-coriaceous, elliptic-oblong, with a very short blunt acumen, slightly narrowed to the petiole; upper surface rather dull, the lower paler and shining; main nerves 18 to 25 pairs, bold, spreading; length 6 to 9 in., breadth 1·5 to 2·5 in.; petiole ·75 in., stout. *Racemes* less than 1 in. long, few-flowered, bracteolate, crowded at the apices, or in the axils near the apices, of the rather long naked often whorled branchlets; pedicels stout, ·15 in. long. *Flowers* ·5 in. in diam. *Sepals* rotund, thickly coriaceous. *Petals* longer than the sepals, thin. *Stamens* numerous, in one series, monodelphous at the base; Wall. Cat. without number or locality; Hook. fil. Fl. Br. Ind. i, 276, (excl. syn. *Mesua Singaporiana*, Wall. Cat. 4836.)

Malacca; Maingay (Kew Distrib. 177). Perak; Scortechini, 97.

The foregoing description has been drawn up from Maingay's Malacca specimens above quoted, which have been accepted by Sir Joseph Hooker as of the species described by Planchon and Triana as *K. racemosa*. These authors founded the species on a Wallichian specimen in M. de Candolle's Herbarium, without number or indication of locality, which had been separated from some other Wallichian number, and which bears the following note by Choisy "*Mesua speciosa? specimen imperfectum sine notula in herb. Wallichiano repertum.*" This specimen I have not seen. Of Wall. Cat. No. 4836, *(Mesua Singaporiana,)* there is a specimen in Herb. Calc.; and it is certainly different from Maingay's 177, being more like a *Mesua* than a *Kayea*.

3. KAYEA GRANDIS, King, n. sp. A glabrous tree, 40 to 80 feet high. *Leaves* large, coriaceous, oblong to elliptic-oblong, sub-acute, the edges revolute (when dry), slightly narrowed towards the rounded or sub-acute base; both surfaces rather dull (when dry), the 20 to 25 pairs of main nerves sub-horizontal, prominent, the secondary nerves also prominent; length 9 to 18 in., breadth 3 to 4·5 in.; petiole ·4 to ·75 in., smooth. *Flowers* sub-globose in bud, pedicelled, in short few-flowered axillary cymes crowded in the axils of the leaves, rarely solitary, about 1·25 in. in diam. when expanded; pedicels ·5 in. *Sepals* rotund, the outer concave very coriaceous; the inner thin, not larger than the outer. *Petals* elliptic-oblong, acute, larger than the sepals (·5 in. long or more). *Ripe fruit* turbinate, 2 to 2·5 in. in diam. and 1·25 in. thick, leathery, completely enveloped by the persistent, thickened, outer sepals.

Malacca; Maingay (Kew Distrib. 178), Cantlay No. 2354. Perak, King's Collector.

A very fine species; at once distinguished by its large leaves and depressed turbinate fruit. The fruit, and probably the whole plant, abounds in yellow juice. According to M. Cantley the wood sinks in water.

4. KAYEA KUNSTLERI, King, n. sp. A glabrous tree, 30 to 50 feet high; the branchlets brownish, sub-striate, not tuberculate. *Leaves* thinly coriaceous, elliptic-lanceolate, acuminate, sub-undulate, the base much narrowed to petiole; both surfaces rather dull (when dry) with a few scattered opaque black dots; the lower pale, sub-glaucescent (when dry); length 4 to 6 in., breadth 1 to 2·25 in.; petiole ·25 in. to ·4 in., rugose; nerves 20 to 24 pairs, unequal, prominent; the lower horizontal, the upper slightly curving upwards. *Flower* solitary, axillary or terminal, 1·5 to 2 in. diam., on a very short smooth pedicel, bracts at its base linear-subulate: bud globose, smooth. *Sepals* unequal as in *nervosa*. *Petals* oblong-acuminate, 1 in. long. Ripe fruit ovoid, gradually narrowing into a short subulate apical beak.

Perak: King's Collector, Nos. 3301, 6850: Penang, Curtis, No. 1419; Malacca, Maingay, No. 176.

This is allied to *K. nervosa*, T. Anders.; but it is readily distinguished from that by its smooth branchlets, by the leaves much and gradually narrowed to both base and apex, and by the oblong-acuminate petals. A shrubby form of this occurs in Penang (Curtis, Nos. 805, 1418,) and in Perak (King's Collector, No. 1345) in which all the parts are smaller and the leaves are less acuminate at the apex, and rounded instead of much attenuated at the base.

5. KAYEA NERVOSA, T. Anders. in Hook. fil. Fl., Br. Ind. i, 277. A glabrous tree; the branchlets minutely tubercled, 4-angled. *Leaves* subsessile, membranous, elliptic-oblong, shortly and bluntly acuminate, the base rounded or emarginate; both surfaces (when dry) dull coppery brown, the lower paler; nerves 16 to 20, unequal, rather prominent beneath; length 3 to 5 in., breadth 1·25 in. to 2 in.; petiole ·15 in. long, rugose as is the base of the midrib. *Flowers* axillary, usually sōlitary (sometimes 2 or 3 from an axil), or terminal, 1·75 in. in diam.; pedicels ·75 in. or less, tubercled, each with several linear lanceolate bracts at its base. *Sepals* unequal, the outer very coriaceous, sub-orbicular; the inner nearly twice as large but thinner. *Petals* obovate; filaments about as long as the slender pistil. *Ripe fruit* sub-globular, beaked, leathery, ·75 in. in diam. or more, the calyx marcescent. Kurz Flora Burm. i, 96; *Mesua nervosa*, Pl. and Triana Mem. Guttif. 279.

Malacca, Perak. Distrib. Burmah.

6. KAYEA CAUDATA, King, n. sp. A slender glabrous tree, 20 to 30 feet high, with drooping habit; the branchlets slender, pale brown, striate. *Leaves* membranous, obovate-elliptic, caudate-acuminate, mucronulate, edges undulate, slightly narrowed to the rounded base; both surfaces dull, the lower pale; nerves 12 to 14 pairs, prominent, sub-horizontal; length 3 to 3·5 in. of which the acumen froms ·7 in.; breadth 1 to 1·15 in., petiole ·15 in. *Flowers* unknown. *Fruit* solitary, terminal, shortly pedicellate, narrowly ovoid-cylindric, tapering very much to the apex and often curved, less narrowed to the base, 2 to 2·5 in. long, and 1 to 1·25 in. in diam. at the middle; bracts at base of pedicel subulate, 1-nerved. *Sepals* persistent, the outer pair orbicular, the inner oblong: pedicel about ·2 in. long, rather shorter than the subulate bracts.

Perak; King's Collector, No. 7937.

Only once collected and only in fruit. Easily recognisable by its caudate-acuminate leaves and fruit.

7. KAYEA ELEGANS, King, n. sp. A glabrous tree 40 to 60 feet high, with slender drooping branches; branchlets very thin, pale gray. *Leaves* thinly but rigidly coriaceous, lanceolate, acuminate, the base acute, the

edges undulate (when dry); both surfaces rather dull, the nerves numerous but indistinct, the midrib slightly prominent; length 2·25 to 3 in., breadth ·5 to ·75 in., petiole ·25 to ·35 in. *Flower* solitary, axillary or terminal, ·4 in. in diam.; pedicel ·1 in. long with several ovate-acute bracts at its base. *Sepals* nearly equal, the outer coriaceous. *Petals* oblong, acute, smaller than the sepals. *Ovary* narrowly ovoid, attenuate above, and passing into the long filiform curving exserted style. *Fruit* unknown.

Perak; on Gunong Bubu, elevation from 1500 to 2000 feet. King's Collector.

A very distinct and elegant species, distinguished by its thin rigid lanceolate leaves and very slender branches.

4 Mesua, Linn.

Trees. *Leaves* opposite, rigidly coriaceous, often pellucid-dotted; veins very numerous, very slender, at right angles to the midrib. *Flowers* polygamous or hermaphrodite, large, axillary or terminal, solitary. *Sepals* and *petals* 4 each, imbricate. *Stamens* very numerous, filaments filiform, free or connate at the base; anthers erect, oblong, 2-celled, dehiscence vertical. *Ovary* 2 celled; style long, stigma peltate; ovules 2 in each cell, erect. *Fruit* between fleshy and woody, 1 celled by the absorption of the septum, at length 4-valved, 1-4-seeded. *Seeds* without an aril, testa fragile. Distrib. Tropical Asia; 3 species.

1. Mesua ferrea, Linn. sp. 734. A medium sized tree with spreading head; branches faintly 4-angled, glaucous. *Leaves* coriaceous, linear-lanceolate to oblong-lanceolate, acute or acuminate, the base acute or rounded; above shining; below pruinose, glaucous or glaucescent; nerves numerous, close, inconspicuous; length 3 to 6 in., breadth ·75 to 1·25 in., petiole ·25 to ·35 in. *Flowers* ·75 to 3 in. in diam., in pairs or solitary, usually terminal. *Sepals* orbicular, fleshy, the margins thin. *Petals* 4, obovate, white; anthers large, elongate. *Fruit* ovoid-conic to subglobose, from 1 to 2 in. long, the sepals persistent. Choisy in DC. Prod. i, 562; Choisy Guttif. Ind. 40; Planch. and Triana Mem. Guttif. 271: Roxb. Fl. Ind. ii, 635; W. and A. Prod. 102; Wall. Cat. 4834; Wight Ill. 127, Ic. t. 118; Beddome Flor. Sylvat. Gen. xxiii; Hook. fil. Fl. Ind. i, 277; Bl. Bijdr. 216: Miq. Fl. Ind. Bat. i, Pt. 1, 509; Kurz For. Fl. Burm. i, 97: *M. speciosa*, Chois. in DC. l. c.; Guttif. Ind. 40; Wight Ic. t. 118 and 961; Wall. Cat. 4835; Pl. and Trian. l. c. 375; Beddome l. c. xxiii. *M. pedunculata*, Wight Ill. 127; Ic. t. 119. *M. coromandeliana*, Wight Ill. 129; Ic. t. 117; Pl. and Trian. l. c. 378; Beddome Flor. Sylvat. t. 64. *M. Roxburghii*, Wight Ill. 127; Beddome l. c. xxiii. *M. salicina*, *M. Walkeriana* and *M. pulchella*, Planch. and Trian. l. c. 373,

374, and 379. *M. sclerophylla*, Thwaites Enum. 407; Beddome l. c., xxiii. *M. Nagana*, Gard. in Calc. Journ. Nat. Hist. vii, 4.

In all the Provinces. Distrib. Eastern and Southern provinces of British India; Ceylon: often cultivated.

A variable species to which many names have been given. A form with narrow leaves (·5 in. broad) and small flowers is found in Ceylon, and was distinguished by Thwaites as var. *angustifolia* (*M. salicina*, Pl. and Tri.). In other forms from Ceylon and the South of India, the leaves have very little of the characteristic white waxy powder on their under surfaces; and these formed the bases of Planchon and Triana's species *M. pulchella*, and of Wight's *M. Coromandeliana*.

2. MESUA LEPIDOTA, T. Anders. in Hook. fil. Fl. Br. Ind. I, 288. A slender glabrous tree, 60 to 80 feet high; the branches pale brown, the youngest minutely rugose when dry. *Leaves* coriaceous, shining, narrowly elliptic or oblong-lanceolate, the apex shortly acuminate, the base acute; lower surface pale, nerves indistinguishable but the midrib prominent on both surfaces; length 2 to 3 in., breadth ·75 to 1·2 in., petiole ·15 in. *Flowers* unknown. *Fruit* solitary, terminal, pedicellate, broadly ovoid or depressed-globular when young, slightly pointed when mature, apiculate, 1 in. or more in diam., subtended at the base by the 4 lignified sub-rotund spreading sepals: pericarp thick, woody, rugulose, dehiscing vertically by 2 (rarely 3) pointed valves. *Seeds* two, plano-convex, or one depressed-globose; the testa brown, brittle; pedicels 1 to 1·5 in. long, thickened upwards, and with several minute subulate deciduous bracts at their bases.

Malacca; Griffith (Kew Distrib. No. 845). Perak; Scortechini, No. 183*b*, King's Collector, Nos. 4551 and 5881.

It is suggested in Fl. Br. Ind. (I, 278) that Griffith's No. 845, although now put with *Mesua*, is probably the type of a new genus between *Kayea* and *Mesua*. Griffith's specimens have no flowers, and unfortunately neither have those of the Perak collectors. The latter appear to belong to the same plant as Griffith's; but their leaves are rather smaller, the branchlets more slender, and the pericarp slightly thinner. It may therefore be found, when fuller material is forthcoming, that there are two species here, and that neither belongs to *Mesua*.

ORDER XV. TERNSTRŒMIACEÆ.

Shrubs rarely climbing, or trees. *Leaves* alternate, simple (in Indian species) entire or often serrate, usually coriaceous, exstipulate. *Flowers* handsome, seldom small, usually subtended by 2 sepal-like bracts, rarely diclinous, axillary, 1 or more together, rarely in lateral or terminal racemes or panicles. *Sepals* 5, rarely 4-7, free or slightly con-

nate, the innermost often larger. *Petals* 5, rarely 4-9, free or connate below, imbricate or contorted. *Stamens* numerous (definite in *Sladenia* and *Stachyurus*) free or connate, usually adnate to the base of the deciduous corolla; anthers basifixed or versatile, dehiscing by slits or rarely by terminal pores. *Ovary* free ($\frac{1}{2}$-inferior in *Anneslea*), sessile, 3-5-celled, (many-celled in *Actinidia*); styles as many, free or connate, stigmas usually small; ovules 2-8 in each cell, rarely solitary, never orthotropous. *Fruit* baccate or capsular. *Seeds* few or numerous, placentas axile; albumen scanty or 0, rarely copious; embryo straight or hippocrepiform, cotyledons various. Distrib. Rare in temperate, abundant in tropical Asia and America, almost wanting in Africa and entirely in Australasia; species about 270.

Tribe I. TERNSTRŒMIEÆ. *Peduncles* 1-flowered. *Petals* imbricate. *Stamens* adherent to the base of the corolla; anthers basifixed. *Fruit* (in Indian genera) indehiscent. *Seeds* usually few; albumen fleshy, usually scanty. *Embryo* curved; cotyledons shorter than the radicle and about as broad.

* Fruit inferior.

1. *Anneslea.*

** Fruit superior.

Flowers hermaphrodite.

Anthers usually pilose, stamens and seeds numerous, ovary 3-5-celled — 2. *Adinandra.*

Flowers dicœcious.

Flowers large, on long pedicels ... 3. *Ternstrœmia.*

Flowers small, sessile or sub-sessile ... 4. *Eurya.*

Tribe II. SAURAUJEÆ. *Peduncles* many-flowered. *Petals* imbricate. *Anthers* versatile. *Fruit* usually pulpy, rarely sub-dehiscent. *Seeds* numerous, minute, albumen abundant. *Radicle* straight or slightly curved and longer than the cotyledons.

Climbers, dicœcious .. .. 5. *Actinidia.*

Trees or shrubs; usually hermaphrodite ... 6. *Saurauja.*

Tribe III. GORDONIEÆ. *Peduncles* 1-flowered, often very short. *Petals* imbricate. *Anthers* versatile. *Fruit* indehiscent or loculicidal. *Albumen* scanty or 0. *Cotyledons* various; radicle short, straight or curved.

* Fruit indehiscent.

7. *Pyrenaria.*

** Fruit dehiscent.

Ovules lateral, seeds winged, radicle inferior ... ... 8. *Schima.*

Ovules pendulous, seeds winged, radicle superior ... ... 9. *Gordonia.*

Tribe IV. BONNATIEÆ. *Flowers* in lateral panicles crowded near the apices of the branches. *Anthers* versatile; *capsule* dehiscing from base.... 10. *Archytaea.*

1. ANNESLEA, Wall.

Evergreen glabrous trees or shrubs. *Flowers* in terminal corymbs, large, white, 2-bracteolate. *Sepals*, 5, their lower part fleshy, connate, and adherent to the ovary, their upper part coriaceous and crowning the fruit. *Petals* 5, connate by their bases. *Stamens* numerous; the filaments short, inserted on the torus; anthers narrow, elongate, 2-celled, introrse, with a long apiculus from the connective. *Ovary* half immersed in the torus, 3-celled; style cylindric, 3-fid: ovules many, pendulous. *Fruit* a leathery inferior berry crowned by the sepals. *Seeds* oblong, flattened, emarginate at one end, with a hard testa and fleshy albumen. Distrib. Burmah and Malayan Peninsula: species 2.

ANNESLEA CRASSIPES, Hook. in Choisy Mem. Ternst. 41. A bush or small tree; young branches stout, the bark rough, rather pale. *Leaves* coriaceous, obovate or oblanceolate with short abrupt blunt acumen, or oblong-lanceolate and acute, much narrowed at the base; the edge thickened and obscurely glandular-serrate; nerves 6 to 8 pairs, invisible in the fresh, faint in the dry state, the midrib prominent in both: length 2·5 to 6 in., breadth 1·5 to 2·25 in., petiole ·6 to 1 in. *Flowers* 1 to 1·25 in. in diam., in corymbs of 3 to 6; pedicels ·5 to 1·25 in., recurved; bracteoles fleshy, square, keeled. Free portion of *sepals* fleshy, ·65 in. long, yellow, rounded or emarginate. *Petals* smaller than the sepals, membranous, ovate-acuminate. *Stamens* about 30. *Fruit* ovoid, 1 to 1·5 in. long (excluding the free part of the sepals), rough; style persistent. Hook. fil. Fl. Br. Ind. i, 280.

Mount Ophir in Malacca; Griffith &c.—Perak; on Gunong Batu Puteh at 3,400 ft., Wray, Scortechini.

Var. *obovata.* A bush. *Leaves* obovate, minutely and bluntly mucronate; *fruit* conspicuously verrucose.

Perak, Gunong Bateh, at an elevation of 6,700 feet.

Anneslea is practically a *Ternstræmia* with half inferior fruit.

2. ADINANDRA, Jack.

Small evergreen trees with the habit of *Ternstræmia* or *Gordonia*. *Peduncles* axillary, solitary, recurved, 2-bracteate at the apex. *Flowers* often silky outside. *Sepals* 5. *Petals* 5, connate at the base. *Stamens* many, often 1-4-delphous, the inner smaller; anther cells lateral, narrow, elongate, the connective apiculate, usually hairy. *Ovary* 3-5-celled; style ultimately elongate, entire or shortly 3-5-fid; ovules many

in each cell. *Fruit* globose, subtended by the persistent calyx and crowned by the style. *Seeds* many, small, albumen fleshy. Distrib. Confined (except the W. African *A. Mannii*) to the Malay Peninsula and Indian Archipelago; species 12.

1. ADINANDRA DUMOSA, Jack in Malay Misc. ii, No. 7, p. 50. A large shrub or small tree, glabrous everywhere except the stamens; young branches slender, terete, dark brown. *Leaves* coriaceous, glabrous, reddish beneath, oblong-lanceolate to elliptic, more or less acute or obtusely acuminate, the base narrowed; edges entire or obsoletely serrate; midrib prominent especially beneath, nerves invisible; length 2 to 4 in., breadth 1·25 to 1·75 in., petiole ·1 to ·2 in. *Flowers* ·65 in. in diam., peduncles ·4 to ·75 in. long, not thickened after flowering; bracteoles leathery, broadly ovate, opposite, close to the calyx. *Sepals* sub-erect, glabrous, leathery, ovate-rotund, blunt, sometimes emarginate. *Petals* longer than the sepals, membranous, oblong-lanceolate with broad bases, the apex minutely apiculate, erect, conniving. *Stamens* about 30, the inner shorter: filaments united by their bases, pilose: *anthers* with 2 narrow lateral cells; the connective broad and pilose behind, its apex mucronate. Ovary 5-celled, the placentas incurved, multi-ovulate; style subulate: stigma small, simple. *Fruit* ·4 to ·5 in. in diam., baccate, dry, with coriaceous pericarp, imperfectly 4-5-celled. Seeds numerous, reniform. Wall. Cat. 3664, (corrected at p. 215 to 3666) and 7071. Dyer in Hook. fil. Fl. Ind. i, 282; Miq. Fl. Ind. Bat. i, Pt. 2, p. 477; Choisy Mem. Ternst. 24. *A. Jackiana* and *trichocoryna*, Korth. Verh. Nat. Gesch. Bot. 106, 107. *A. cyrtopoda*, *stylosa* and *glabra*, Miq. Flor. Ind. Bat. Suppl. i, 478, 479. *Ternstræmia? dumosa*, Wall. Cat. 2245. *Camellia? Scottiana*, Choisy l. c. (not of Wall. Herb.).

In all the provinces except the Andamans and Nicobars, at low elevations, common. Distrib. Malay Archipelago.

2. ADINANDRA ACUMINATA, Korth. Verh. Nat. Gesch. Bot. 109. A tree 40 to 60 feet high; all parts except the stamens glabrous; young branches slender, smooth, dark-coloured; the older pale and rough. *Leaves* coriaceous, oblong-lanceolate, acuminate, the base acute, both surfaces shining; midrib prominent below; the 9 to 11 pairs of nerves rather prominent below when dry, forming a double series of arches inside the margin; length 3·5 to 6 in., breadth 1 to 2·5 in., petiole ·25 in. *Flowers* ·9 in. in diam.; peduncles ·75 to 1 in. long, thickened and verrucose after flowering; bracteoles leathery, lanceolate, at some distance from the calyx, alternate. *Sepals* leathery, glabrous; the two outer small, ovate; the three inner much larger, spreading, rotund, the edges serrulate. *Petals* larger than the inner sepals, rotund, spreading, fleshy, the edges thin. *Stamens* about 40, the inner smaller: filaments united by their bases,

short, coarsely pilose as are the narrow elongate apiculate anthers. *Ovary* 5-celled, depressed, ribbed, pubescent; style filiform, pilose; stigma small, conical. *Fruit* ·5 to ·75 in. in diam., baccate, dry, with coriaceous, pubescent, but ultimately glabrous, pericarp, 2-celled, many seeded: *Seeds* oval, flat, furrowed on both sides. Hook. fil. Fl. Br. Ind. I, 282. Miq. Fl. Ind. Bat. I, Pt. 2, p. 478. *Gordonia acuminata*, Wall. Cat. 3664. *Ternstræmia? coriacea*, Wall. Cat. 1453. *Camellia axillaris*, Wall. Cat. 1453, p. 158 (not of Roxb. ex Bot. Reg. 349, see Journ. Linn. Soc. xiii, 330). *Polyspora axillaris*, Chois. Mem. Ternstr. 91 (not of Don).

In all the provinces, from 1000 feet to (in Perak) 4000 feet: common. Distrib. Sumatra.

In Journ. Linn Soc. xiii, 330, there is a note by Mr. W. T. Thiselton Dyer (who elaborated this family of *Ternstræmiaceæ* in the Flora of Brit. India) on the plant issued by Wallich as *Ternstræmia coriacea*, and identified by him (in an appendix to his Catalogue,) with *Camellia axillaris*, Roxb. Mr. Dyer shows that, under the name *C. axillaris*, Roxb, a totally different plant (= *Gordonia anomala*, Spreng) was figured in the Bot. Register (t. 349), and that Wallich's *T. coriacea* was neither Roxburgh's plant nor that figured in the Bot. Register, but really *A. acuminata*, Korth.

3. ADINANDRA MACULOSA, T. Anders. Hook fil. Fl. Br. Ind. I, 282. A tree 40 to 60 feet high; young branches dark-coloured, pubescent near the apex, not silky. *Leaves* coriaceous, elliptic to sub-rotund, shortly, bluntly and abruptly acuminate, entire, the base acute; upper surface smooth, shining; the lower pale brown, dull, opaque, minutely rugulose when dry; main nerves 8 to 10 pairs, spreading, very indistinct; midrib distinct: length 3·5 to 5·5 in., breadth 1·5 to 2·25 in.; petiole ·25 to ·4 in., glabrous. *Flowers* ·75 in. in diam.; peduncles little longer than the petioles, pubescent; bracteoles sub-rotund, opposite, close to the calyx. *Sepals* unequal, the two inner smaller, rotund to broadly ovate, very fleshy, puberulous externally, the edges thin and glabrous as is the whole internal surface. *Petals* membranous, ovate, acute, glabrous, connivent. *Stamens* about 30; filaments attached to the petals, short, glabrous: *Anthers* narrow, the cells elongate, lateral; the connective sericeous with short glabrous apiculus. *Ovary* depressed-hemispheric, 5-ribbed, 5-celled. *Style* cylindric, glabrous: stigma small, conical. *Fruit* ·5in. in diam., globular, baccate, 4-celled, the leathery pericarp at first pubescent but finally glabrous; *seeds* numerous, black, shining, horse-shoe-shaped, small. *Ternstræmia integerrima*, Wall. Cat. 1452 in part.

Penang; Wallich, Curtis. Perak; Scortechini, Wray, King's Collector: at elevations of from 1800 to 4000 feet.

4. ADINANDRA INTEGERRIMA, T. Anders. Hook. Fl. Br. Ind. I, 282. A small tree: young branches with dark-coloured bark, the extremities fulvous-pubescent, the leaf-buds sericeous. *Leaves* sub-coriaceous, ovate to ovate-oblong, shortly acuminate, the base acute or rounded, the margin minutely glandular-serrulate; upper surface glabrous, shining, greenish when dry; the lower pale brown, sparsely pubescent and with many minute black glands; main nerves 10 to 14 pairs, thin, interarching ·2 in. from the margin, slightly prominent on both surfaces (when dry) as are the reticulations: length 3·5 to 5 in., breadth 1·4 to 2·25 in.; petiole ·2 to ·25 in., pubescent. *Flowers* ·6 in. in diam.; peduncles not much longer than the petioles, strigose; bracteoles ovate, acute, opposite, close to the calyx. *Sepals* spreading, broadly ovate, acute; the two outer larger, very thick, the edges thin, serrulate-denticulate; externally adpressed-sericeous, internally smooth and shining. *Petals* smaller than the sepals, coherent by their bases, connivent, ovate, acute, membranous, glabrous except an adpressed sericeous patch on the back, connivent. *Stamens* about 30, adnate to the base of the petals; filaments short, glabrous; anthers elongate, fusiform, the cells lateral; connective sericeous with a long glabrous apiculus. *Ovary* depressed-hemispheric, adpressed-sericeous, 5-celled, multi-ovulate; style cylindric, expanded below, sericeous; stigma small, sub-capitate. *Fruit* (*fide* Dyer) baccate, adpressed-pubescent, ·7 in. in diam. *Seeds* small, shining. Dyer in Hook. fil. Fl. Br. Ind. I, 282. Pierre Fl. Forest Coch.-Chine, t. 125, (excl. syn. *T. villosa*, Choisy.). *Ternstræmia dasyantha*, Choisy (not of Korth.). *Ternstræmia? integerrima*, Wall. Cat. 1452 (in part) and 2246. *Gordonia reticulata*, Wall. Cat. 3663 and 7070.

Penang; Wallich. Perak, Scortechini: at low elevations.

The specific name is unfortunate, as in all the specimens I have seen the leaves are as described above and not entire.

5. ADINANDRA VILLOSA, Choisy Mem. Ternstr. 24. A pubescent tree, 40 to 50 feet high: young branches pilose, pale brown, leaf buds sericeous. *Leaves* coriaceous, oblong-lanceolate, shortly acuminate, entire or faintly glandular-crenate; the base rounded, rarely acute; upper surface shining, glabrous except the pubescent midrib; under surface yellowish, sparsely pubescent: nerves 7 to 9 pairs, ascending, interarching within the margin, not prominent: midrib bold; reticulations rather distinct: length 4 to 5·5 in., breadth 1·5 to 1·75 in.; petiole ·2 in., pilose. *Flowers* ·75 in. in diam., from ·4 to nearly 1 in. long, pilose; bracteoles ovate, from the middle of the peduncle, fugaceous. *Sepals* spreading, subequal, rotund, fleshy, pilose externally, smooth internally. *Petals* ovate, blunt, membranous, adpressed-sericeous externally, the edges glabrous. *Stamens* about 30, attached to the bases of the petals, sericeous, the

filaments short; cells narrow, elongate, connective with a glabrous apiculus. *Ovary* depressed-hemispheric, adpressed-sericeous, 5-ridged, 5-celled; *style* cylindric, glabrous except at the base; stigma minute. *Fruit* ·5 in. in diam., baccate, adpressed-sericeous, 4-celled. *Seeds* numerous, reniform, brown, small. Hook. fil. Fl. Br. Ind. I, 283. Kurz Fl. Burm. i, 100. *Ternstræmia? sericea*, Wall. Cat. 1454. *Schima Wallichii*, Choisy Mem. Ternst, 91 (not of Choisy in Zoll. Cat.)

Perak; King's Collector, Wray, at elevations from 3000 to 4000 feet. Distrib. Tavoy.

6. ADINANDRA HULLETTII, King, n. sp. A tree; young branches densely and minutely rusty-tomentose. *Leaves* coriaceous, elliptic-oblong, shortly acuminate, the base acute; edges glandular, denticulate, slightly recurved when dry; upper surface smooth, shining; lower brown, densely and minutely tomentose, the midrib prominent; the nerves spreading, obscure, about 10 pairs; length 3·5 to 5·5 in., breadth 1·5 to 2·5 in., petiole ·25 in. *Flowers* ·75 in. in diam.; peduncles ·4 to ·5 in., tomentose: bracteoles broadly ovate, acute, opposite, close to the calyx. *Sepals* spreading, fleshy, all glabrous internally: the outer 2 rotund, tomentose externally, larger than the others; the inner 3 ovate-rotund, tomentose externally, the edges glabrous. *Petals* longer than the sepals, membranous, oblong, blunt, glabrous, the tips reflexed. *Stamens* from 40 to 50, all epipetalous; anthers densely pubescent, the connective with a long blunt glabrous apiculus; filaments short, geniculate. *Ovary* conic-hemispheric, adpressed-sericeous; style glabrous; stigma small, conic. *Fruit* unknown.

Singapore; Murton, No. 144, Hullett, No. 103. Penang; Curtis, No. 275, in part.

A very distinct species of which fruit is as yet unknown.

7. ADINANDRA MACRANTHA, Teysm. and Binn. Nat. Tijd. Ned. Ind. xxv, 421. A tree 20 to 50 feet high: young branches with pale glabrous bark, the apices and buds sericeous. *Leaves* coriaceous, elliptic-oblong, with a broad apex suddenly contracted to a short blunt acumen, narrowed in the lower third to the sub-acute base; the edges entire or faintly crenate; both surfaces glabrous; the upper greenish, the lower pale yellowish when dry: midrib bold, sometimes puberulous; main nerves 15 to 20 pairs forming a double series of arches inside the margin, rather prominent as are the reticulations; length 5 to 7 in., breadth 2 to 3·25 in.; petiole ·25 in., stout. *Flowers* 1·4 in. in diam.; peduncles 1 to 1·5 in. long, smooth: bracteoles rotund-reniform, opposite, close to the calyx. *Sepals* spreading, fleshy with thin ciliolate edges, smooth, rotund, the two outer smaller. *Petals* larger than the sepals, sub-coriaceous with thin edges, rotund, spreading. *Stamens* 40 to 50, adpressed-

sericeous everywhere, the apiculus of the connective with a terminal tuft; filaments short. *Ovary* depressed-hemispheric, 3-4-celled, smooth as is the cylindric style; stigma small, conical. *Fruit* ·75 in. in diam., imperfectly 3 to 4-celled, pericarp smooth. *Seeds* few, large, brown, horse-shoe-shaped, punctate, shining.

Perak; from 500 to 1500 feet, King's Collector, Scortechini. Distrib. Sumatra.

The Perak specimens agree perfectly with Teysmann's types collected in Sumatra.

8. ADINANDRA MIQUELII, King. A medium sized tree: young branches stout, the bark white and polished. *Leaves* thickly coriaceous, oblanceolate, apex with a short blunt abrupt point, gradually narrowed in the lower half to the petiole, entire; midrib prominent; nerves 5 to 7 pairs, ascending, anastomising ·2 in. from the margin, invisible in the fresh, inconspicuous in the dry state; length 4 to 6 in, breadth 1·5 to 2·25 in.; petiole ·6 to ·75 in., stout. *Flowers* about ·75 in. in diam., scattered below the apices of the branches, axillary and extra-axillary, polygamous: peduncles spreading, solitary, compressed, pale, ·75 to 1 in. long; the bracteoles just below the flower, small, fugaceous. *Sepals* fleshy, rotund, the 2 outer much smaller. *Petals* larger than the sepals, rotund, clawed, fleshy. *Stamens* numerous, chiefly from the torus, pubescent, the connective with a long apiculus, filaments short. *Ovary* depressed-globose, 2-celled, narrowed above into the short cylindric style: *stigma* shortly bifid, the lobes narrow acute spreading. *Fruit* unknown. *Ternstræmia bancana*, Miq. Fl. Ind. Bat. Suppl. 477.

Penang; Curtis, No. 1612. Distrib. Bangka.

The stigma shows that this does not belong to the genus *Ternstræmia* into which Miquel put it. It is evidently a rare plant in Penang, as Curtis's specimen (which agrees perfectly with Miquel's type-specimens from Bangka) is the only one which I have seen from that island.

3. TERNSTRŒMIA, Linn.

Evergreen glabrous trees or shrubs. *Leaves* more or less coriaceous, entire or crenate-serrate. *Peduncles* axillary, solitary or sub-fasciculate, recurved, 2-bracteolate, flowers usually dicœcious. *Sepals* 5, imbricate. *Petals* 5, imbricate, connate by their bases. *Stamens* many, mostly adherent to the base of the corolla, anthers glabrous. *Ovary* 2 to 3-celled, style simple or absent. *Stigma* broadly 2 to 3-lobed or sub-entire; ovules usually 2 in each cell, pendulous. *Fruit* indehiscent, sub-baccate. *Seeds* rather large, the albumen copious or scanty. Distrib. Tropical Asia and America; species about 30.

1. TERNSTRŒMIA PENANGIANA, Choisy Mem. Ternst. 20. A tree 40 to 60 feet high: young branches rough, stout, pale brown. *Leaves* coriaceous, oblanceolate to obovate, sub-acute or bluntly mucronate, rarely blunt or emarginate, entire, the base narrowed to the petiole; nerves 5 to 7 pairs, spreading, invisible when fresh and inconspicuous when dry, the midrib prominent: length 3·5 to 6 in., breadth 1·5 to 2·5 and (in Wallich's specimen) to 4 in., petiole ·6 to ·75 in. *Flowers* ·8 to 1·25 in. in diam., dioecious, solitary, axillary; pedicels ·75 in. long, recurved or straight. *Sepals* rotund, fleshy with thin edges. *Petals* much larger than the sepals but similar in texture, rotund with a broad claw, the edges sub-denticulate. *Stamens* in the male very numerous, crowded, short, (reduced to filaments in the female); connective slightly produced beyond the anther cells, truncate; ovary globular, its cells biovulate. *Stigmas* 2, large, reniform, with erose glandular edges. Berry dry with coriaceous epicarp, globular, 1 to 1·5 in. in diam., subtended by the thickened rugulose connate sepals: *Seeds* about 4, oblong. Dyer in Hook. fil. Fl. Br. Ind. I, 281. Kurz For. Fl. Burmah i, 99. Miq. Fl. Ind. Bat. I, Pt. 2, p. 469. Pierre Fl. For. Coch.-Chine, t. 123. *T. macrocarpa*, Scheff. Obs. Phyt. i, p. 5. *Erythrochiton Wallichianum*, Griff. Notul. iv. 565, t. 585 A, fig. 7. *Fagraea dubia*, Wall. Cat. 4456. *Garcinia acuminata*, Wall. Cat. 4871 A, in part, (*fide* Hooker in Journ. Linn. Soc. xiv, 486.

Penang; Wallich, Griffith, Curtis. Andamans and Nicobars; Kurz, King's Collector. Distrib. Java.

This species was founded by Choisy on the imperfect Wallichian specimens from Penang issued by Wallich as his No. 4456. These specimens consist of leaves and fruit with some imperfect flowers. The leaves are obovate, almost rotund, and broader than those of any *Ternstrœmia* which has been collected since. It is therefore not quite certain that the Andaman and Nicobar plant is really the same as Wallich's, although in stigma and fruit it agrees. The plant described and figured as *T. Penangiana* by Pierre (l. c.) is obviously the same as the Andaman and Nicobar species, but whether it is the same as Wallich's No. 4456, I am not prepared to say.

2. TERNSTRŒMIA SCORTECHINII, King, n. sp. A tree, 20 to 40 feet high: young branches with pale brownish-grey bark, striate when dry. *Leaves* coriaceous, verticellate, drying of a pale green, oblanceolate, the apex shortly abruptly and rather bluntly acuminate, narrowed from above the middle to the rather stout short petiole; edges entire; under surface rather pale; midrib distinct on both surfaces; nerves visible on neither; length 3 to 5 in., breadth 1·25 to nearly 2 in.; petiole ·4 to ·5. *Flowers* dioecious, ·6 to ·7 in. in diam., pedunculate, axillary, solitary or in fascicles of 2 to 6; peduncles slender, compressed, 1 to 1·5 in. long; the 2

bracteoles about ·2 in. below the calyx, minute, fugacious. *Sepals* subequal, fleshy with thin edges, rotund. *Petals* much larger than the sepals, orbicular to reniform, clawed. *Stamens* in the male very numerous; anthers sub-sessile, the connective broad, bearing the 2 cells on its edges and produced above them into a broad short truncate process; rudimentary ovary flattish, without stigma. *Female flowers* like the males but with fewer stamens; *ovary* hemispheric, imperfectly 2-celled; stigmas 2, sub-sessile, flat, foliaceous, each divided into 3 or 4 lobes with thick corrugated edges. *Fruit* a dry ovoid berry with coriaceous dark-coloured epicarp, ·75 in. long, and ·2 in. in diam., subtended by the leathery calyx. *Seeds* 2, large, broad, horse-shoe-shaped, flattish, ·5 in. long.

Perak, at low elevations; Scortechini, King's Collector.

A very distinct species with leaves curiously like those of *Illicium evenium*, and with smaller flowers than the other species.

3. TERNSTRŒMIA CORIACEA, Scheff. Obs. Phyt, ii, p. 16, (not of Wall.). A tree 50 to 70 feet high: young branches light brown, smooth. *Leaves* coriaceous, usually oblong-oblanceolate with an abrupt short blunt apiculus, sometimes oblong-lanceolate and acute; attenuate in the lower third to the stout petiole: midrib bold; main nerves 5 to 9 pairs, spreading, anastomosing ·2 in. from the entire margin, rather inconspicuous even when dry: length 4 to 6 in., breadth 1·75 to 2·5 in., petiole ·75 to 1 in. *Flowers* 1·25 to 1·5 in. in diam., dioecious, solitary, axillary or from the axils of fallen leaves; peduncles flattened, deep brown, 1·5 to 2 in. long, slender; bracteoles alternate, minute, about ·25 in. below the calyx. *Sepals* fleshy with thin edges, rotund; the 2 outer rather smaller than the inner 3. *Petals* larger than the sepals, much imbricate, rotund, fleshy, not clawed. *Stamens* in the male numerous, from the torus, the connective with a broad rounded apical appendage; quite absent in the female flower. Ovary globular, 2-celled; *stigmas* 2, sub-sessile, each deeply divided into 6 to 8 sub-spathulate lobes. *Fruit* baccate, globular-ovoid, ·75 in. in diam. and nearly 1 in. long, dry, with a coriaceous rind, subtended by the slightly enlarged hardened calyx and crowned by the remains of the stigma. Seeds about 4, oblong, the testa rugulose.

Malacca; Griffith (Kew Distrib.) 183. Penang; Curtis, No. 1055. Perak; King's Collector. Distrib. Bangka.

Distinguished from the preceding by its anthers, by the venation of its leaves, and by its young branches. Teysmann's specimens from Bangka in no way differ from those from Perak, Malacca and Penang. Wallich's fragmentary specimens, (Cat. No. 7430,) probably fall here. The plant issued by Wallich as *Ternstrœmia coriacea* (Cat. No. 1453) is, as

suggested by the late Dr. Anderson and Mr. Dyer (Journ. Linn. Soc. xiii, 331), *Adinandra acuminata*, Korth.

4. EURYA, Thunb.

Shrubs. *Leaves* narrow, usually crenate-serrate. *Flowers* small, unisexual, sessile or shortly pedicelled, in axillary fascicles, rarely solitary, with persistent bracteoles. *Sepals* 5. *Petals* 5, united at the base. *Stamens* 15 or less, rarely 5; anthers glabrous. *Ovary* 3 (rarely 2-5)-celled; styles 3 (rarely 2-5) free or united; ovules many in the inner angle of each cell. *Fruit* baccate. *Albumen* fleshy. Distrib. S. E. Asia, Indian Archipelago and Pacific Islands; described species more than 30, probably reducible to 10.

1. EURYA ACUMINATA, DC. Mém. Ternst. 29. A tree 30 to 40 feet high: young branches slender, pubescent to minutely tomentose. *Leaves* thinly coriaceous, narrowly oblong-lanceolate or oblanceolate, acuminate, serrulate, the base acute; upper surface glabrous, shining; the lower paler, pubescent especially on the midrib, or sub-glabrous; length 2·5 to 3·5 in., breadth ·5 to ·75 in., petiole ·1 in. or none. *Flowers* ·25 in. in diam., in 2 to 6-flowered clusters; pedicels short, pubescent, bracteolate. Buds globose. *Sepals* unequal, the outer smaller, rotund with a thickened wrinkled patch near the base, pubescent externally. *Petals* larger and thinner than the sepals, oblong, blunt, veined, glabrous. *Male flowers:* stamens about 12, glabrous; filaments slender, anthers oblong, blunt; rudimentary ovary conic without styles, or absent. *Female flower* as in the male, but the sepals and petals smaller and narrower; stamens 0; ovary ovoid-conic; smooth, 3 or (by abortion) 2-celled, multi-ovulate; styles 3, united or free in the lower two-thirds, cylindric, about as long as the ovary. *Stigmas* on the inner surfaces of the upper part of the styles. *Fruit* globular, ·15 in. in diam., smooth, subtended by the persistent calyx and crowned by the styles. *Seeds* small, angled, pitted, shining, brown. *Diospyros serrata*, Ham. in Don Prod. Fl. Nep. 143.

In all the provinces at low elevations, common. Distrib. Subtropical Himalaya, Assam, Chittagong and Burmese Ranges, Malay Archipelago, Fiji Islands.

In a plant with such a wide distribution, variations in form are only to be expected. Many of these have been treated as species which, in Sir J. D. Hooker's Flora of British India, Mr. Thiselton Dyer has reduced to varieties as follows:

Var. 1. *euprista*, Korths. Verh. Nat. Gesch. Bot. 113 (sp.); styles distinct. Griff. Ic. 604, f. 3. *E. multiflora*, DC. l. c. 25. *E. serrata*, Blume Fl. Jav. præf. vii. *E. angustifolia*, Wall. Cat. 1465.

E. acuminata, Royle Ill. 127, t. 25. *E. salicifolia*, Blume Mus. Bot. II, 118. *E. chinensis*, Hook. f. and Thoms. Herb. Ind. Or. (not of Brown).

Var. 2. *Wallichiana*, Steud. in Blume Mus. Bot. ii, 118 (sp.); styles united. *E. lucida*, Wall. Cat. 1462. *E. fasciculata*, Ham. in Wall. Cat. 1463. *E. acuminata*, Wall. Cat. 1464. *E. bifaria*, Wall. Cat. 3721 ? *E. membranacea*, Gardn. in. Calc. Journ. Nat. Hist. vii, 444. *E. japonica*, β *acuminata*, Thw. Enum. Pl. Cey. 41.

2. Eurya Wrayi, King, n. sp. A small tree: young branches slender, purplish-brown, laxly pubescent towards the apex. *Leaves* drying greenish-yellow, thinly coriaceous, oblong-lanceolate, bluntly acuminate, minutely serrulate, the base rounded: upper surface glabrous, shining; lower paler, dull, sparsely pubescent; length 2 to 2·75 in., breadth ·5 to ·7 in., petiole ·1 in. *Flowers* narrowly ovate, pointed, scarcely expanding, ·1 in. in diam. and ·2 in. long, axillary, solitary or in 2 to 6-flowered sessile umbels, quite glabrous: pedicels slender, glabrous, 1· to ·15 in. long, bi-bracteolate. *Sepals* unequal, erect, fleshy, ovate, acute, much imbricate. *Petals* sub-equal, erect, membranous, ovate, acute, connate in the lower third. *Stamens* 15, glabrous; anthers narrow, elongate, shortly apiculate; filaments short. *Ovary* ovoid, gradually narrowing into the thick style, imperfectly 3-celled; stigmas short. *Fruit* unknown.

Perak; at Tapa, Wray.

Distinguished by its narrowly ovate pointed flower-buds and flowers, and by the rounded bases of its leaves.

4. Actinidia, Lindl.

Glabrous, strigose, or tomentose shrubs; usually climbers. *Leaves* entire or serrate, usually membranous, feather-veined. *Flowers* polygamous or dicœcious, in axillary cymes, rarely solitary. *Sepals* 5, slightly imbricate, subconnate at the base. *Petals* 5, somewhat contorted-imbricate. *Stamens* many; anthers dehiscing by slits. *Ovary* many-celled; the styles as numerous, divergent and elongated after flowering. *Fruit* baccate. Distrib. Himalaya, China and Japan; species about 8.

1. Actinidia Miquelii, King, n. sp. Slender, scandent, 30 to 60 feet long: young branches cylindric, striate, glabrous, dark-coloured. *Leaves* membranous, ovate-acuminate to sub-rotund, mucronate, minutely glandular-dentate, the base rounded or slightly cordate; upper surface glabrous, rigid, the nerves and midrib minutely pubescent: lower surface pale brown when dry, minutely but densely tomentose; nerves about 5 pairs, the lower spreading, the upper sub-erect, prominent beneath as are the midrib and transverse veins; length 3 to 4 in., breadth

2·5 to 3·5 in.; petiole 1·25 to 1·5 in., slender. *Cymes* axillary, dichotomous, spreading, rusty-tomentose, on slender ebracteate peduncles 1·5 in. long which lengthen to 3 in. in fruit. *Flowers* numerous, dicœcious, ·5 in. in diam.; pedicels ·3 to ·4 in. long. *Sepals* thick, ovate, blunt, densely rusty-tomentose externally. *Petals* larger than the sepals, membranous, oblong-obovate, blunt. *Stamens* in males very numerous, glabrous; the anthers broadly oblong, blunt, deeply cordate at the base; filaments slender. *Ovary* in the males absent or rudimentary, densely pilose, and with several rudimentary styles. *Female flowers* unknown. *Fruit* ovoid, ·75 in. long, and ·4 in. in diam., baccate, smooth, pulpy, subtended by the persistent calyx and crowned by the remains of 15 to 20 filiform styles. *Seeds* numerous, shining, brown, less than ·1 in. long, ovoid, sub-compressed, pitted and with several longitudinal grooves. *Kadsura pubescens*, Miq. Fl. Ind. Bat. Suppl. 620.

Perak; on trees, at elevations of 3,500 to 4000 feet, King's Collector, Nos. 5437 and 8789. Distrib. Eastern Sumatra.

I have carefully examined a type specimen of Miquel's *Kadsura pubescens* from Sumatra named by the author's own hand; and there is no doubt whatever that it is an *Actinidia* and not a *Kadsura*; nor is there any that it is identical with the above quoted numbers of the Calcutta collector from Perak. Miquel is quite wrong in describing his plant as having 3 sepals and 6 petals; there being 5 in each whorl.

6. Saurauja, Willd.

Trees or shrubs. *Branches* usually brown with whitish tubercular dots, both branches and leaves more or less strigose-pilose or scaly when young. *Leaves* approximate at the ends of the branches, usually serrate, with parallel veins diverging from the midrib. *Inflorescence* lateral, often from the axils of fallen leaves, cymose, subpaniculate, rarely few-flowered. *Bracts* usually small, remote from the calyx. *Flowers* usually hermaphrodite. *Sepals* 5, strongly imbricate. *Petals* 5, usually connate at the base. *Stamens* many; anthers dehiscing by pores. *Ovary* 3-5-celled; styles as many, distinct or connate, rarely dry and sub-dehiscent. Distrib. Tropical and sub-tropical Asia and America. Species about 60.

1. Saurauja tristyla, DC. Mém. Ternstr. 31, t. 7. A shrub or tree 2 to 3 feet high; young branches with grey, faintly striate bark, deciduously scurfy and strigose towards the apices. *Leaves* membranous, oblanceolate, abruptly and shortly acuminate, minutely and remotely serrulate or sub-entire, the base acute; both surfaces glabrous, except the midrib and main nerves which have a few scale-like hairs, the lower pale brown when dry; nerves 10 to 12 pairs, erecto-patent, rather prominent be-

neath; length 5 to 8 in., breadth 1·5 to 3 in., petiole ·5 to 1 in. *Flowers* ·2 to ·3 in. in diam., narrowly ovate in bud, in fascicles of 2 to 5 from small axillary tubercles, but mostly from the axils of fallen leaves; the pedicels slender, minutely bracteolate, ·75 in. long, scurfy. *Male flower; sepals* erect, unequal, the two outer smaller, more or less broadly ovate, blunt; *petals* larger than the sepals, sub-erect, membranous, veined, oblong, blunt: stamens about 25, glabrous; the anthers broadly ovate, blunt, with sutural dehiscence; rudimentary ovary none. *Female flower; sepals* and *petals* as in the male; stamens absent. *Ovary* ovoid, glabrous; *styles* 3, distinct to the base, or united half way. *Fruit* globular, sub-dehiscent, scarcely exceeding the calyx. *Seeds* broadly ovate, angled, deeply pitted. Dyer in Hook. fil. Fl. Br. Ind. i, 287. Miq. Fl. Ind. Bat. i, Pt. 2, p. 483; Kurz For. Fl. Burm. i, 104. *Scapha Candollei* and *S. Pinangiana*, Choisy Mem. Ternst. 31. *Ternstræmia pentapetala*, Jack in Malay. Misc. i, No. 5, 40. *T. trilocularis*, Roxb. ex Wall. Pl. As. Rar. ii, 40. *T. bilocularis*, Boxb. Fl. Ind. ii, 522?

In all the provinces (except the Andamans and Nicobars from which it has not as yet been sent); at low elevations, common.

The plant figured under this name by Pierre (Fl. Forest Coch.-Chine) is obviously a different species; for it has 5 styles, and it differs also in other respects.

2. SAURAUJA NUDIFLORA, DC. Mém. Soc. Geneve, i, 422. A tree 20 to 30 feet high; youngest branchlets dark-coloured, squamulose towards the apex; the older esquamulose, pale, faintly striate. *Leaves* membranous, oblanceolate, shortly and sharply acuminate, minutely glandular-serrate, narrowed in the lower half to the acute base; both surfaces glabrous; the midrib and 12 to 13 pairs of bold spreading nerves puberulous on the upper, sparsely covered with flattened hairs on the lower, surface; length 6 to 10 in., breadth 2·25 to 3·75 in., petiole ·5 to 1·25 in. *Flowers* ·25 to ·4 in. in diam., white, glabrous, solitary or in 2 to 3-flowered fascicles from tubercles in the axils of leaves or of fallen leaves; pedicels ·5 to 1 in. long, slender, sparsely scurfy, and with several acute bracteoles. *Sepals* rotund, fleshy with thin edges, united at the base. *Petals* oblong-obovate, emarginate, united below, larger than the sepals. *Stamens* 25 to 30, attached to the base of the corolla: anthers oblong-ovate, curved, the dehiscence sutural, not apiculate; filaments short. *Ovary* hemispheric, pubescent. *Styles* 3 to 5, united in the lower half. *Fruit* covered by the accrescent calyx. *Seeds* ovate, deeply foveolate, pale brown, shining. Miq. Fl. Ind. Bat. I, Pt. ii, p. 484. ? *S. Noronhiana*, Bl. Bijdr. 126.

Perak 800 to 3,500 feet, common. Distrib. Sumatra and Java.

This differs from *S. tristyla* in its rotund sepals, larger flowers, pu-

bescent ovary, sub-globular seeds, and in its often having 5 styles. There may be two species covered by the foregoing description: but I cannot find a constant character to separate them. I believe this to be Blume's *S. Noronhiana* and *De Candolle's S. nudiflora:* but, not having been able to consult any authentic specimen of the former and only moderately good ones of the latter, I am not quite satisfied of the identity with them of this common Perak tree. The genus *Saurauja* is a very puzzling one. The species come very close together, and Miquel's descriptions of the numerous species which he named are so incomplete that it is almost impossible to recognise them with any certainty.

3. SAURAUJA CAULIFLORA, Bl. Bijdr. 128, var. *calycina*, King. A tree: young branches and petioles densely covered with long paleaceous yellowish hairs. *Leaves* elliptic-oblong, shortly and sharply acuminate, the edges faintly aristate-serrate, the base acute; upper surface glabrous; lower pale brown when dry, strigose on the midrib nerves and veins; main nerves 12 to 14 pairs, spreading, prominent beneath; length 6 to 9 in., breadth 2·25 to 2·75 in., petiole about 1 in. *Flowers* ·4 in. in diam., on long pedicels, crowded in large fascicles from flat tubercles on the larger branches and stem; pedicels from ·75 to 1·5 in. long, tomentose-squamulose, rufous. *Sepals* rotund, the outer densely tomentose-squamulose; the inner almost glabrous, veined. *Petals* obovate-oblong, blunt, united in their lower third, membranous, nerved, scarcely so large as the sepals. Stamens about 25, adherent to the corolla, elongate-ovate, adnate, dehiscing by two large apical pores. *Ovary* scaly, 3-celled, multi-ovulate. *Styles* 3, united by their bases only. *Fruit* enveloped by the slightly accrescent calyx, sub-glabrous, 3-celled. *Seeds* small, ovate-rotund, compressed, foveolate, pale brown. DC. Mém. Soc. Geneve I, 425; Korth. Verh. Nat. Gesch. Bot. 126; Hassk. Pl. Jav. Rar. 273; Miq. Fl. Ind. Bat. I, Pt. ii, p. 486. Ann. Mus. Ludg. Bat. IV, 106.

Perak: Batu Kurau. Scortechini, No. 1614.

This differs in no respect from the plant described by Blume, of which I have seen good specimens, except in its larger sepals which are densely tomentose-squamulose externally.

7. PYRENARIA, Blume.

Shrubs or trees. *Leaves* serrate, large and sub-membranous. *Flowers* sub-sessile, axillary, erect or nodding. *Sepals* usually 5, unequal, graduating from the bracts to the petals. *Petals* connate at the base. *Stamens* very numerous, mostly connate, adnate to the base of the petals. *Ovary* 5-celled; styles 5, free, or partially united; ovules 2 in each cell, attached laterally. *Fruit* drupaceous, indehiscent. *Seeds* oblong, stout, with a thick woody testa, wingless; albumen 0; cotyledons large, crum-

pled or conduplicate; radicle inferior, inflexed. Distrib. Malay Peninsula and Indian Archipelago. Species about 7.

1. PYRENARIA ACUMINATA, Planch. ex Choisy Mém. Ternstr. 84. A shrubby tree, 15 to 30 feet high: young branches densely tawny or fulvous-tomentose. *Leaves* elongate-oblanceolate, sometimes oblong-elliptic, acuminate, minutely serrulate, the base attenuate; upper surface glabrous, shining, the midrib and nerves puberulous, greenish when dry; the lower softly pubescent, minutely papillose; the midrib stout, tomentose; main nerves about 10 pairs, sometimes forking and always interarching about ·25 in. from the margin; length 6 to 12 in., breadth 2 to 3·5 in.; petiole ·4 in., tomentose. *Flowers* 1·5 in. in diam., shortly pedicellate, solitary, crowded towards the ends of the branches in the axils of leaves or of abortive leaves; pedicels recurved, tomentose; bracteoles lanceolate, close to the calyx, tawny-silky externally as are sepals and petals. *Sepals* and *petals* graduated in size from the bracts inwards, broadly ovate, acuminate, glabrous and brownish internally; *anthers* ovate, adnate, only about one-fourth the length of the slender filaments. *Ovary* ovoid, sericeous: styles united in the lower half, free above: stigmas small. *Fruit* depressed-globose, 1·5 in. in diam., and 1 in. long; the pericarp sericeous, becoming glabrescent, leathery, sub-succulent. *Seeds* few, large, sub-reniform, compressed. Miq. Fl. Ind. Bat. I, Pt. ii, p. 493; Dyer in Hook. fil. Fl. Br. Ind. i, 290. *Ternstræmia? macrophylla*, Wall. Cat. 3663. *Gordonia* (*Camellia?*) *acuminata*, Wall. Cat. 3664.

Singapore, Malacca, Penang and Perak; at low elevations.

2. PYRENARIA KUNSTLERI, King, n. sp. A tree 15 to 30 feet high; all parts glabrous except the very apices of the branches, the youngest leaf-buds, and the flowers. *Leaves* elliptic-oblong to oblong-oblanceolate, acuminate, faintly serrate in the upper three-fourths; the base entire, acute; both surfaces, but especially the lower, much pustulate when dry; the lower brown, the upper greenish; midrib and 6 to 8 pairs of erecto-patent main nerves rather prominent below, the latter interarching ·3 to ·4 in. from the edge; secondary nerves prominent; length 5·5 to 7 in., breadth 1·8 to 2·5 in., petiole ·3 to ·4 in. *Flowers* ·75 in. in diam., on peduncles ·1 in. long; bracteoles 2, opposite, broad, close to the calyx. *Sepals* rotund, coriaceous, pubescent externally. *Petals* larger than the sepals, rotund, glabrous, fleshy with thin edges, white. *Stamens* numerous: anthers broadly ovate, apiculate, 4 or 5 times as long as the slightly flattened filaments. *Ovary* ovoid-conic, ridged, adpressed-pubescent, 5-celled. *Style* short, conic, glabrous, 5-ridged. *Stigmas* small, acute, connivent. *Fruit* 1·25 in. long, and ·9 in. in diam., ovoid, bluntly 5-ridged, pubescent. *Seeds* few, ovate, sub-compressed, ·6 in. long.

Perak; at elevations of 500 to 2000 feet. King's Collector.

3. PYRENARIA WRAYI, King, n. sp. A bush; the young branches pale, minutely adpressed-pubescent towards the apices as are the leaf-buds. *Leaves* thinly coriaceous, oblong-oblanceolate, shortly acuminate, obscurely crenate-serrate to sub-entire; the base attenuate, entire; both surfaces glabrous, the lower yellowish-green, pustulate when dry, the upper greenish: midrib prominent especially beneath: main nerves 10 to 12 pairs, interarching ·25 in. from the margin, rather prominent beneath; length 6 to 8 in, breadth 1·75 to 2·25 in.; petiole ·3 or ·4 in., stout. *Flowers* ·5 in. in diam., buds globose; peduncle very short, glabrous; bracteoles 3, broadly ovate, connate just below the calyx. *Sepals* 6, increasing in size inwards, rotund, minutely pubescent externally. *Petals* 6, rotund, concave, thinner than the sepals, puberulous externally with broad glabrous edges. *Stamens* numerous; anthers broadly ovate, about one-fourth as long as the filaments. *Ovary* shortly ovate-conic, with many lines of white hair, 5 or 6-celled. *Styles* 3, united for half their length: stigmas vertically flattened. Ovules 2 in each cell. *Fruit* sub-globular, bluntly 5-ridged, deciduously pubescent, 1 in. in diam. *Seeds* ovoid, sub-compressed, smooth, ·6 in. long, the hilum very large.

Perak; at low elevations, Wray, Scortechini.

Closely allied to *P. Kunstleri*; but the leaves have many more nerves, the flowers are 6-merous with only 3 styles, and the fruit is more globular than in that species.

8. SCHIMA, Reinw.

Trees with evergreen leaves. *Peduncles* usually erect, axillary or solitary, or the uppermost shortly racemed. *Flowers* handsome, 2-bracteolate. *Sepals* 5, subequal, united below. *Petals* 5, much larger, connate at the base, the outermost concave and sub-cucullate. *Stamens* many, adnate to the base of the petals. *Ovary* 5- (rarely 4-6) celled; styles united, or partially free at the apex with broad spreading stigmas; ovules 2-6 in each cell, attached laterally, sub-pendulous. *Capsule* woody, depressed-globose, loculicidal, with a persistent axis. *Seeds* flat, kidney-shaped, dorsally ridged, hilum central, albumen scanty; cotyledons foliaceous, flat or crumpled, accumbent; radicle inferior, curved upwards. Distrib. Tropical Asia. Species about 3.

1. SCHIMA NORONHAE, Reinw. in Bl. Bijdr. 130. A tree 40 to 80 feet high: young branches with pale brown bark, deciduously pubescent, lenticellate. *Leaves* sub-coriaceous, narrowly elliptic to elliptic-lanceolate, acuminate, faintly crenate-serrate, often sub-entire, the base narrowed or rounded; both surfaces glabrous, the lower pale, dull: main nerves 9 or 10 pairs, spreading, slender, rather distinct below when dry, the minor nerves obsolete; length 4·5 to 6 in., breadth 1·4 to 2·5 in., petiole

·75 to 1·25 in., flat, more or less winged. *Flowers* 1·25 to 1·5 in. in diam., axillary, crowded at the apices of the branches and forming lax terminal pseudo-corymbs; peduncles 1 to 1·5 in. long, slender, thickened towards the apex, glabrous or pubescent, bracteoles minute. *Sepals* rounded, or sub-acute, glabrous or glabrescent, the margins minutely ciliate, about ·15 in. long. *Petals* thin, veined, obovate, clawed, their bases pubescent and their edges ciliate in the lower half, white or pale pink. *Stamens* 5-delphous; anthers sub-rotund, small, the filaments 4 or 5 times as long. *Ovary* depressed-hemispheric, pubescent, 5-celled. *Style* thick; stigma discoid, with 5 blunt lobes. *Fruit* ·75 in. in diam., adpressed-pubescent when young, glabrous or sub-glabrous when old; upper part of columella expanded, 5-angled. Korth. Verh. Nat. Gesch. Bot. 143, t. 29, figs. 21 to 27. Choisy Mém. Ternst. 54; Miq. Fl. Ind. Bat. I, Pt. i, p. 492; Ann. Mus. Lugd. Bat. IV, 112; Kurz For. Fl. Burm. i, 107. *S. crenata*, Korth. l. c. t. 29, figs. 1 to 20; Miq. Flora l. c. 491; Ann. l. c. 113; Kurz l. c. 107; Hook. fil. Fl. Br. Ind. i, 289. Pierre Fl. Forest Coch.-Chine, t. 121. *Gordonia floribunda*, Wall. Cat. 1456; Griff. Not. iv, 563. *G. oblata*, Roxb. Fl. Ind. ii, 572.

In all the provinces except the Andamans and Nicobars. Distrib. The Malayan Archipelago, Burmah, at elevations of 1000 to 3000 feet.

This rather widely distributed species varies remarkably little. In spite, however, of this, Korthal, carved out if it his species *S. crenata*, which he states to have the same calyx, corolla, stamens, ovary, style and stigma as Reinwardt's *Noronhae*, but to differ in the leaves and capsule. His own descriptions and figures of leaves and capsule, however, of both species are practically identical. The only other really distinct species of the genus appear to me to be *S. Khasiana*, Dyer, *S. bancana*, Miq. and perhaps *S. Wallichii*, Choisy.

9. Gordonia, Ellis.

Trees with evergreen entire or crenate leaves. *Flowers* usually large, often subsessile, solitary in the axils of the leaves or collected at the ends of the branches, 2-4 bracteolate. *Sepals* usually 5, unequal, graduating from the bracts to the petals. *Petals* free or united at the base, imbricate, the inner larger. *Stamens* indefinite, 5-delphous or 1-delphous, adnate to the petals: anthers versatile. *Ovary* 3-5-celled; style single; the stigma flat, rotund, rather thick, sometimes lobed; ovules pendulous, 4 to 8 in each cell. *Capsule* oblong, woody, loculicidal, with a persistent column. *Seeds* flat or compressed, the apex often winged, albumen none; embryo usually straight, the cotyledons ovate, flat or plicate. Distrib. Tropical, Asia N. America. Species about 15.

1. GORDONIA EXCELSA, Bl. Bijdr. 130. A tree 30 to 40 feet high: young branches slender, smooth, pale brown, pubescent towards the apex. *Leaves* thinly coriaceous, glabrous, elliptic-lanceolate, acuminate, the edge slightly recurved, sub-serrulate, base acute; midrib bold, puberulous near the base beneath: main nerves 5 to 7 pairs, indistinct, bifurcating ·3 in. from the edge and forming wide intra-marginal areolae: length 2·5 to 5 in., breadth 1 to 1·5 in.; petiole ·3 in., slender. *Flowers* 1·5 in. in diam., subsessile, solitary, in the upper axils only; pedicel about ·1 in.; bracteoles lanceolate, small, fugaceous. *Sepals* spreading, free, orbicular, pubescent externally, fleshy. *Petals* white, much larger than the sepals, orbicular, minutely pubescent externally, fleshy with broad membranous glabrous margins. *Anthers* ovoid, only a quarter of the length of the flattened filaments. *Ovary* hemispheric-conic, vertically ridged, densely sericeous, 5-celled. *Styles* single, slender, 5-angled; stigma small, with 5 blunt radiating lobes. Capsule 1·5 in. long, ·75 in. in diam., deciduously adpressed-pubescent. *Seeds* 1 in. or more long, three-fourths being wing. Dyer in Hook. fil. Fl. Br. Ind. i, 291. Miq. Fl. Ind. Bat. I, Pt. ii, p. 489. *G. singaporiana*, Wall. Cat. 1457 (in part). *Antheeischima excelsa*, Korth. Verh. Nat. Gesch. Bot. 138, t. 27. *Dipterospermæ, sp.* Griff. Notul. iv, 564.

Malacca. Penang; Curtis No. 834, King's Collector. Perak; King's Collector, Wray; at elevations of 1200 to 2,500 feet. Distrib. Outer ranges of Eastern Himalaya.

Allied to *G. Maingayi*, but with much larger flowers and fruit and differently shaped leaves.

2. GORDONIA GRANDIS, King, n. sp. A tree 80 to 120 feet high; all parts except the flowers glabrous; young branches as thick as a goose-quill, dark purplish-brown when dry. *Leaves* coriaceous, oblong-oblanceolate, shortly acuminate, faintly serrate-crenate in the upper two-thirds, entire in the lower third and prolonged along the petiole: upper surface greenish when dry, shining; the lower dull, brown: nerves 10 to 12 pairs, indistinct, interarching ·15 in. from the margin; length 4·5 to 6 in., breadth 1·1 to 1·5 in., petiole proper ·15 in. *Flowers* 1·5 to 2 in. in diam., solitary, axillary, about ·3 in. long, puberulous; buds globose; bracteoles few, small, fugaceous. *Sepals* and *petals* greenish, rotund, minutely adpressed-sericeous externally, coriaceous, the edges thin and glabrous; the petals much the larger, spreading. *Stamens* very numerous; anthers narrowly oblong, about a fifth of the length of the slender slightly flattened filaments. *Ovary* narrowly ovoid, vertically ridged, minutely adpressed-sericeous. *Style* longer than the ovary, vertically ridged and sericeous like the ovary. *Stigma* with 5 small roundish lobes. *Fruit* unknown.

Perak, at elevations of 500 to 1000 feet, King's Collector.

3. GORDONIA MAINGAYI, Dyer in Hook. fil. Fl. Br. Ind. I, 291. A tree 30 to 40 feet high: young branches slender, with glabrous pale roughish bark, pubescent towards the apices. *Leaves* coriaceous, broadly oblanceolate, shortly and bluntly acuminate, obscurely serrulate in the upper two-thirds, the lower third gradually attenuate, entire: both surfaces glabrous, the upper greenish, the lower brownish when dry, the midrib bold and sparsely pubescent beneath; lateral nerves 6 pairs, indistinct; length 2·5 to 3 in., breadth 1 to 1·4 in., petiole ·25 in. *Flowers* sub-sessile, ·8 to 1 in. in diam., buds sub-globular; bracts, sepals and petals forming a cone, all adpressed-sericeous externally except the glabrous edges: pedicels about ·15 in. long. *Sepals* and petals orbicular, blunt or retuse. *Stamens* numerous; anthers elongate-ovoid; filaments much longer, slender. *Ovary* ovoid-conic, vertically ridged, adpressed-sericeous, 4 or 5-celled. *Style* single, angled. Stigmas 4 or 5, acute, connivent. *Capsules* 4 to 5-angled, woody, 1 to 1·25 long, ·5 to ·6 in diam., 4 or 5-celled, backs of valves flat. *Seeds* ·9 in. long of which three-fourths are wing.

Malacca; Maingay, No. 192. Perak, Scortechini, Wray; at about 1000 feet.

4. GORDONIA SCORTECHINII, King, n. sp. A tree; young branches slender, dark brown, glabrous, the apices and leaf-buds minutely puberulous. *Leaves* coriaceous, narrowly elliptic, blunt, or sub-emarginate, slightly narrowed to the sub-acute or rounded base; both surfaces glabrous, the lower dull, pale; the upper shining, green when dry; midrib bold; nerves about 8 pairs, faint on the upper, invisible on the lower surface; length 2 to 3 in., breadth ·8 to 1·4 in., petiole ·25 in. *Flowers* ·6 in. in diam., solitary, axillary, only towards the apices of the branches, on very short curved pubescent peduncles. Buds ovoid. *Sepals* orbicular, fleshy, unequal, pubescent externally. *Petals* twice as large as the sepals, membranous, puberulous externally. *Stamens* few, (only about 30); anthers broadly ovate, about a fourth as long as the flattened filaments. *Ovary* narrowly ovoid, pubescent, 3-celled. *Styles* 3, thick, shorter than the ovary, pubescent; stigmas on the inner surface only, slightly spreading. *Fruit* unknown.

Perak; Scortechini, No. 362*b*.

This has a superficial resemblance to *G. Maingayii*, to which the late Father Scortechini referred it. But it has smaller flowers with fewer stamens, and very different ovary and styles; the leaves moreover are thicker than those of *G. Maingayii*, and are not oblanceolate.

5. GORDONIA IMBRICATA, King, n. sp. A tree? Young branches rather stout, glabrous, dark purplish-brown when dry. *Leaves* coria-

ceous, oval-oblong, sometimes slightly oblanceolate, the apex obtuse, very slightly emarginate, the edges thickened and slightly recurved, quite entire or very faintly sub-serrulate; the base slightly narrowed, roundish; both surfaces shining, the upper greenish; the lower dull, tinged with brown when dry, midrib bold: nerves about 12 pairs, thick but inconspicuous; length 1·75 to 2·25 in., breadth ·9 to 1·1 in.; petiole ·15 in., thick. *Flowers* about 1 in. in diam., axillary, solitary, sub-sessile, only in the upper axils; the buds elongate-obovoid; the bracts numerous, closely imbricate, passing into the sepals, all orbicular, and pubescent externally with broad scarious glabrous edges. *Petals* much larger than the sepals, orbicular, densely and minutely pubescent externally, fleshy with thin glabrous edges. *Stamens* numerous; anthers ovate, about one-fourth of the length of the slender cylindric filaments. *Ovary* ovoid-conic, ridged, adpressed-pubescent, 5-celled. *Style* single, boldly 5-ridged; stigmas distinct, small. *Fruit* slightly under 1 in. long, ·4 in. in diam., 5-angled, adpressed-pubescent, subtended by the elongate imbricate cup formed by the sepals and bracts. *Seeds* ·75 in. in length, of which one half is wing.

Perak. Scortechini, No. 402b.

Father Scortechini's scanty specimens are accompanied by no notes; but, from the species of *Hymenophyllum* growing on the branches of some of them, I conclude that they were collected probably at elevations of 4000 or 5000 feet. The remarkable imbricate buds at once distinguish this species.

6. Gordonia multinervis, King, n. sp. A tree 40 to 50 feet high; young branches smooth, greenish, sub-compressed, all parts glabrous except the flowers. *Leaves* thinly coriaceous, obovate, apex rounded or mucronate, faintly crenate-serrate or subentire, attenuate below the middle and passing into the short petiole; upper surface greenish when dry, the lower brown, midrib bold; main nerves 12 to 18 pairs, spreading, rather faint, interarching ·2 in. from the edge, length 5·5 to 8 in., breadth 2·5 to 3·25 in.; petiole ·2 to ·25 in., stout. *Flowers* 1·25 in. in diam., on stout curved peduncles ·5 to ·6 in. long; bracts small, few, fugaceous. *Sepals* rotund, fleshy, spreading, adpressed-sericeous externally, the edges glabrous. *Petals* like the sepals but larger and thinner, spreading. *Anthers* short, broadly ovate, only a quarter of the length of the slender slightly flattened filaments. *Ovary* ovoid-conic, adpressed-sericeous, 5-celled. *Style* single, thick, sub-glabrous. *Stigma* discoid, with 5 blunt lobes. *Fruit* unknown.

Perak; Scortechini, No. 1968.

The style and stigmas are quite those of a *Gordonia*. The leaves, however, are more those of a *Pyrenaria* and are very like those of the Burmese *P. attenuata*, Seem.

10. ARCHYTÆA, Martius.

Glabrous shrubs or trees with semiamplexicaul leaves. *Flowers* on a lateral, compressed, 1 to 4-flowered, peduncle. *Bracts* large, leaf-like. *Sepals* and *petals* each 5. *Stamens* numerous, 5-adelphous; anthers versatile. *Ovary* 5-celled; styles distinct, or wholly united; ovules numerous, in many imbricating rows. *Capsule* acuminate, septicidal from below, with a persistent axis. *Seeds* linear-subcylindric, albumen scanty. Distrib. Trop. Amer. and Indian Archipelago. Species 3.

1. ARCHYTÆA VAHLII, Choisy Mem. Ternstr. 73. A glabrous shrub (sometimes epiphytic) or small tree: the young branches, pale, smooth. *Leaves* thinly coriaceous, sessile, narrowly oblanceolate, acute, entire, slightly narrowed to the truncate or slightly amplexicaul base; nerves about 15 pairs, straight, erect, interarching with an intra-marginal nerve; length 3 to 4·5 in., breadth ·5 to ·75 in. *Flowers* 1 to 1·25 in. in diam.; peduncles crowded towards the end of the branches, coloured; bracts close to the flowers, oblong, sub-serrulate, ·5 to ·75 in. long. *Sepals* ovate-rotund, coriaceous. *Petals* obovate, much larger than the sepals, membranous, veined, pink. *Fruit* ·75 in. long, narrowly ovoid, acuminate, crowned by the persistent styles. Hook. fil. Fl. Br. Ind. i, 294. Pierre Fl. For. Coch.-Chine, t. 129. *Ploiarium elegans*, Korth. Verh. Nat. Gesch. Bot. 135, t. 25. Miq. Fl. Ind. Bat. I, Pt. ii, 491. *Hypericum alternifolium*, Vahl. Symb. ii, t. 42; DC. Prodr. i, 445; Wall. Cat. 4806.

In all the provinces except the Andaman and Nicobar Islands. Distrib. The Malayan Archipelago.

** Note on the fruit of *Xanthophyllum Scortechinii*, King.

Since the pages describing the genus *Xanthophyllum* were printed off, I have received from Mr. Curtis, of the Forest Department, Penang, complete specimens of this species; and I am therefore now able to add to the account of it given on p. 140 the following description of the young fruit.

Fruit globular or ovoid-globular, ·75 to 1 in. in diam., shortly apiculate, smooth, shining; the pericarp very thick.

Ripe fruit is still a desideratum.

IX.—*Description of a new Genus of Bamboos.*—*By* J. S. Gamble, M. A.

[Received January 29th;—read February 5th, 1890.]

(With Plate VII.)

Microcalamus, nov. genus.

Spikelets many-flowered, spicately arranged in a leafy panicle, rachilla jointed under the flowers. *Flowers* many hermaphrodite, the uppermost male or empty; empty glumes 2, paleaceous, smooth. *Flowering glume* falcate, many-nerved. *Paleae* 2-keeled, falcate, keels ciliate. *Lodicules* 3. *Stamens* 6, filaments free. *Fruit* with a fleshy pericarp, adhering to the seed: style shortly 3-fid, stigmas plumose. A climbing wiry grass with leaf branches in whorls. *Leaves* short, articulate with their sheaths, without transverse veinlets. *Flower-spikes* on leafy branches; spikelets distant as are the flowers.

M. Prainii, nov. spec. A small wiry climbing bamboo. *Stems* thin, smooth, green, one quarter inch in diameter, nearly solid and reaching 30 feet in length, swollen at the nodes into a well-marked ring; internodes 8 to 9 inches long. *Stem sheaths* thin, somewhat scabrous, 4 to 4½ inches long, gradually tapering to a point and crowned with a short (·1 to ·2 inch) needle-like apical leaf. *Leaf-branches* short, numerous, in close whorls on the stem and branchlets. *Leaves* small, 2 to 3 inches long by ·3 to ·4 inches broad, much acuminate with a hair-like tip, the point as well as one edge of the leaf scabrous; main veins 2 to 3 pairs, transverse veinlets none; petiole short, distinct; leaf-sheaths smooth, striate, ending in a curved apex under the petiole; ligule blunt. *Spikelets* in terminal and axillary leafy panicles; peduncles very thin, wiry. *Spikelets* in the axils of a sheath-like bract, 1 to 1½ inches long. *Flowers* 5 to 8, spicate, in alternate excavations of a thin glabrous sinuous rachis; terminal ones empty or male. *Empty glumes* two, glabrous, acute, the upper often long acuminate, 5-nerved; the lower 3-nerved. *Flowering glume* triangular-falcate, acute, glabrous, 9-11 nerved, nerves conspicuous. *Paleae* 2-keeled, ciliate on the keels, 7 to 9 nerved, falcate. *Anthers* 6, straight, with a blunt tip, filaments distinct. *Ovary* with fleshy walls; style bulbous, papillose at the base; stigmas 3, plumose. *Lodicules* 3; two obovate, slightly fimbriate at tip, the third acute and 3-toothed; all 3-veined.

Found by Dr. Prain in April 1886 on the edge of a precipice on Pulinabadza, 7,870 feet, Naga Hills, Assam, and by Mr. Rollo on the

Jarain road about 5½ miles from Jowai, Jaintia Hills, 3,500 feet in April 1889. The Khasia name "Sampit."

EXPLANATION OF PLATE VII.

MICROCALAMUS PRAINII, Gamble.

Fig. 1. flower;
Fig. 2. stem-sheath.

X.—Noviciæ Indicæ. II. *An additional species of* Ellipanthus.—*By* D. PRAIN.

[Received and read May 9th, 1890.]

(With Plate VIII.)

The Connaraceous genus *Ellipanthus* Hook. f., founded in 1862 (*Genera Plantarum* i, 434), included five Indian species when the account of it in the *Flora of British India* (vol. ii, pp. 55, 56) was published in 1876. Specimens of a sixth species occur in a collection made in Diamond Island by the writer in 1889. Diamond Island is situated off the south coast of Arakan at the mouth of the Bassein river. The genus is rather Malayan than Indian, though one of the species is confined to Ceylon and one occurs in Pegu; the present is the first occasion on which the genus has been reported from Arakan.

In order to admit the Diamond Island plant the generic description requires very slight modification; unlike the other Indian species this has a glabrous capsule marked externally by a net-work of ridges while its short staminal tube is devoid of hairs. We are thus able, by employing these characters as divisional, to add the species to the *Flora of British India* without altering the excellent arrangement of the Indian species there adopted. Only one word requires to be omitted from the text as it now stands. The following conspectus of Indian *Ellipanthi* in which the new species is included, exhibits all the alteration necessary. A diagnosis and a description of the species are appended.

ELLIPANTHUS Hook. f.

[Generic description (*F. B. I.*, ii, 55) line 6; *delete* "velvety".]

† Capsule velvety, surface even; staminal tube hirsute within.

* *Leaves glabrous beneath or nearly so.* (*F. B. I.*)

1. E. THWAITESII Hook. f.—Ceylon.
2. E. HELFERI Hook. f.—Tenasserim or Andamans; Borneo.

3. E. CALOPHYLLUS Kurz.—Andamans.

** *Leaves pubescent or tomentose beneath. (F. B. I.)*

4. E. TOMENTOSUS Kurz.—Pegu, Martaban, Tenasserim; Siam.

5. E. GRIFFITHII Hook. f.—Malacca; Borneo.

†† Capsule glabrous, surface ridged; staminal tube smooth within.

6. E. STERCULIÆFOLIUS Prain.—Arakan.

ELLIPANTHUS STERCULIÆFOLIUS sp. nov.

Racemis glabris; foliis subtus supraque glaberrimis; foliolulis petiolis subæquilongis late ovatis basi truncatis apice acuminatis; tubo filamentorum glabro; capsula apice aviculari glabra extus nervis exsculptis reticulata.

BURMA: in Arakan australi in sylvis sublittoralibus insulæ "Diamond Island" nuncupatæ; (ipse!).

Arbuscula 4-6 metr. alta foliis alternis exstipulatis 1-foliatis petiolis 5-8 cm. longis laminis 8-12 cm. longis, his 5-7 cm. latis, margine integerrimis supra olivaceis subtus prasinis nervis 5-7-paribus arcuatis, floribus racemosis racemis glabris, calycis 5-partiti segmentis valvatis suberectis oblongo-lanceolatis acuminatis persistentibus 3 mm. longis, his 0·75 mm. latis, post anthesin non auctis sed fructus basin amplectentibus, pedicellis propriis fructigeris 4 mm. longis, staminibus 10 hypogynis 5 sepalis oppositis 2·25 mm. longis totidem alternis 1·75 mm. longis filamentis filiformibus basi monadelphis in tubum vix 0·25 mm. altum conjunctis, disco tenui, gynaecii carpello 1, capsula solitaria longius stipitata apice aviculari folliculari falcata ventre convexa dorso subrecta 30 mm. longa (stipite 7 mm. rostro 6 mm. longis), hac antice 10 mm. a latere 6 mm. tantum lata, extus viridi nervis exsculptis meridionalibus plus minus tamen anastomosantibus sub-10, intus pallida laevi 1-sperma semine erecto 14 mm. longo, hoc 8 mm. lato, funiculo viridi 7 mm. longo basi arillato arillo carnoso cupulari 4 mm. alto colore luteo margine pectinato trientem testæ imum amplectente, testa crassa nigro-brunnea medio antice ala parvula facie endocarpio simillima ornata, tegmine puniceo tenui trienti embryonis summo affixo, embryone exalbuminoso cotyledonibus plano-convexis colore olivaceis amygdalinis 8 mm. longis, his 5 mm. latis, radicula supera alba.

EXPLANATION OF PLATE VIII.

ELLIPANTHUS STERCULIÆFOLIUS PRAIN.

Fig. 1. Calyx laid open.

Fig. 2. Sepal, from outside.

Fig. 3. Sepal, from inside.
Fig. 4. Staminal tube laid open.
Fig. 5. Capsule in section, shewing seed *in situ*.
Fig. 6. Arillus.
Fig. 7. Seed.
Fig. 8. Seed, in section, shewing embryo *in situ*.
Fig. 9. Single cotyledon seen from inside and also edgeways.

Figs. 2, 3 and 4 are enlarged, the others are of natural size. The petals and anthers of the species are at present unknown.

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XI.—*Description de Curculionides et de Brenthides inédits faisant partie des collections du Musée Indien de Calcutta*, *par* MONS. T. DESBROCHERS DES LOGES. *Communicated by* THE SUPERINTENDENT OF THE INDIAN MUSEUM.

[Received July 8th;—Read 6th August 1890]

(1re partie.)

I. CURCULIONIDÆ.

1. BRACHYASPITES SUBFASCIATUS. Long. ♂, 9 mill.; ♀, 12 mill.; lat. ♂, 3·5 mill.; ♀, 5 mill. *Oblongo-elongatus, cinereo-squamosus, obsolete setulosus. Caput breve, post oculos transversim subimpressum; oculis parum prominulis. Rostrum subplanum, strigulosum, inter antennas fossulatum. Antennæ piceæ, pilosæ, articulo* 2o *funiculi* 3o *longiori, cæteris brevibus. Prothorax a latere modice rotundatus, basi marginatus, dense tuberosus. Elytra subelliptica, basi breviter constricta, postice abrupta, grosse punctato-striata, interstitiis subconvexis, ad tertiam partem fascia transversa obsoleta fuliginosa prædita. Tibiæ anticæ intus serratæ.*

Ovale-oblong, brun, recouvert densément d'une squamosité cendrée, mate. Tête transverse, faiblement impressionnée transversalement derrière les yeux, à rides serrées longitudinales sur le front, continuées sur le rostre; yeux médiocrement convexes. Rostre en carré un peu plus long que large, fovéolé entre les antennes. Antennes assez courtes, squa-

meuses et piligères, à scape épaissi, deux premiers articles du funicule allongés, 3-6 submoniliformes, 7e brièvement conique; massue médiocrement épaisse. Prothorax à peine transverse, densément tuberculeux, rétréci également en avant et en arrière, peu arrondi latéralement, rebordé à la base, avec quelques soies très-courtes. Elytres assez allongées, deux fois à deux fois et demie aussi longues que larges, à rebord basilaire étroit, largement interrompu en dedans, ♂ à peine, ♀ plus fortement dilatées latéralement, striées de gros points, avec la suture et les intervalles convexes, ceux-ci sériés de petites soies cendrées; acuminées au sommet, ornées d'une fascie transverse le couleur de suie, vers les deux tiers. Pattes assez grossièrement pubescentes; tibiæ des deux paires postérieures presque droits, les antérieurs courbés en dedans vers le sommet et fortement denticulés intérieurement. Dessous impressionné à la base du premier segment abdominal, surtout ♂, à courtes soies comme celles du dessus.

Sikkim. Collection du Musée Indien de Calcutta et celle de l'auteur.

2. EPISOMUS QUATUOR-NOTATUS. Long. 14 mill.; lat. 6 mill. *Ovalis, niger, cinereo-squamosus. Caput inæquale, ante oculos striis valde obliquis. Rostrum longitudine latitudini æquale. Antennæ scapo setis depressis sparso, clava basi subrotundata ab articulo 7o trapezoidale distincte separata. Prothorax subquadratus. Elytra basi impressa, striis modice punctatis, post medium evanescentibus, punctis subcallosis albidis, aliisque aliquot lateralibus prædita. Tibiæ anticæ intus serratæ.*

Très voisin de l'*E. pauperatus* dont il se distingue par les caractères suivants. En ovale plus oblong. Tête et rostre marqués de plusieurs dépressions linéaires, en outre du sillon très oblique du dessus des yeux: ceux-ci bien plus écartés que chez l'*E. pauperatus*, le front étant bien plus large. Antennes à scape pourvu seulement de quelque soies couchées, à funicule hérissé de poils dressés de la couleur du fond; à deux premiers articles du funicule subégaux, 4-6 subtransverses, 7e bien séparée de la massue arrondie postérieurement, d'un noir profond comme celle-ci. Prothorax analogue à celui de l'*E. pauperatus*. Elytres arrondies, chacune plus obtusément à la base et plus largement impressonnées au dessous de celle-ci, subperpendiculairement déclives en arrière, striées plus distinctement vers la sommet, à ponctuation peu visible par place, à intervalles externes convexes; notées, vers le milieu du tiers antérieur, d'un point blanc squameux, saillant, d'un autre moins arrondi, vers le dernier tiers, et de quelques autres obsolètes, plus bas, qui ne sont peut-être pas constants. Cuisses postérieures tachées de brun à la base. Pattes analogues à celles de l'*E. pauperatus*.

Sikkim. Collections du Musée Indien de Calcutta, et celle de l'auteur.

3. RHYNCHITES FLAVIROSTRIS. Long. 3·3 mill.; Larg. 2·5 mill. *Oblongus supra viridi-cœruleo-metallicus, parce pubescens, infra nigro-virescens. Rostrum, antennis pedibusque totis lœte flavis. Caput subglobosum, vix punctulatum, oculis magnis, prominentibus. Antennæ graciles, articulo* 2o *intermediis breviore. Rostrum capite brevius apicem versus ampliatum, sparsim punctatum. Prothorax subtransversus, subhexagonalis. Elytra elongata, infra scutellum impressa regulariter striata. Tibiæ* 4*-posticæ curvatæ.*

Oblong, vert métallique en dessus, noir bleuâtre ou verdâtre en dessous; parcimonieusement pubescent de gris; rostre, antennes et pattes entièrement d'un flave pâle. Tête brillante, rétrécie en arrière, impressionnée transversalement à la base qui est noirâtre, légèrement boursouflée derrière les yeux qui sont grands et saillants. Rostre plus court que la tête, élargi en avant, marqué d' impressions au devant des antennes, avec quelques points épars. Antennes insérées vers le milieu du rostre, pubescentes, à 2 article intermédiaire pour la longueur aux articles 1 et 3, tous allongés. Prothorax subtransversal, rétréci en avant, à côtés presque parallèles en arrière, à angles postérieurs presque droits; éparsement ponctué, marqué d'une faible impression basale. Ecusson subtriangulaire, noir. Elytres du double plus longues que larges, subparallèles dans leurs trois quarts antérieurs, faiblement déprimées après la base, à stries régulières, formées de points rapprochés; intervalles subconvexes, au moins à la base, à points peu rapprochés. Pattes à poils dressés; tibiæ antérieurs droits, les autres arqués. Dessous faiblement ponctué.

Indes Anglaises. Musée Indien de Calcutta, collection de l'auteur.

4. APODERUS FLAVICEPS. Long. 8 mill. *(sine rostro)*; lat. 4·5 mill., *Subquadratus, glaber. Prothorace pectoreque nigris, elytris cyaneis, cœterum pallide flavum. Caput subglobosum, elongatum, basi anguste constrictum, fere impunctatum, fronte foveolata, callo antennali fossulato. Rostrum breve, basi dilatato, apice piceo. Antennæ breves, articulo* 2o *funiculi intermediis breviore. Prothorax convexus, basi ampliatus, ante basem late, apice anguste constrictus, vage plicatus. Scutellum semilunato-transversum. Elytra subquadrata, humeris dentatis, infra scutellum impressa, sat regulariter punctato-striata, intervallis* 2o *et* 4o *basi carinatis. Tibiæ subrectæ, unco recurvo apice præditæ.*

De forme presque carrée, glabre, prothorax et poitrine noirs, élytres d'un bleu foncé, tout le reste d'un flave pâle. Tête très bombée, faiblement rétrécie derrière les yeux en s'arrondissant, à col assez étroit, marquée d'une fossette entre les yeux, d'une impression oblique entre ceux-ci et d'une faible ligne longitudinale en arrière; saillie sus-antennaire à impression sublanciforme; yeux arrondis, saillants. Rostre

subtransverse, élargi vers le sommet; bouche noirâtre. Antennes à scape atteignant le milieu des yeux, à deuxième article du funicule plus petit que les intermédiaires, 6-8 brièvement coniques; massue oblongue formée de trois articles peu détachés. Prothorax en forme de cloche, étranglé brièvement en avant, largement impressionné transversalement avant la base, quelques rides à celle-ci: une autre impression vers le milieu et une plus petite, longitudinale, en avant, de chaque côté du sillon médian qui est presque entier. Ecusson brièvement semi-ogival. Elytres guère plus longues que larges, à épaules subrectangulaires munies d'une petite dent, fortement impressionnées au dessous de la base, largement arrondies separément au sommet, chargées d'une carène sinueuse interrompue vers le tiers de la longueur; suture élevée ainsi que le pourtour de l'écusson; stries formées de gros points, affaiblies vers l'extrémité; les intervalles externes un peu convexes, peu densément pointillés. Dessous à ponctuation peu profonde avec quelques soies courtes; premier segment abdominal noir dans son milieu. Tibiæ crénelés en dedans, vers le sommet.

Sikkim. Musée Indien, collection de l'auteur.

5. CYLAS SUBMETALLICUS. Long. 4·5 mill.; lat. 2 mill. *Oblongo sub-elongatus, subæreus, glaber, subopacus, antennis pedibusque ferrugineis, femoribus infuscatis. Caput postice depressum impunctatum, fronte subplana, intra oculos cristulata. Rostrum brevius, crassum. Antennæ breves, setulosæ, articulis funiculi transversis, pressis, clava in mare longiore. Prothorax elongatus, antice subglobosus, postice constrictus, laxe punctulatus. Scutellum nullum. Elytra fornicata, basi constricta, callo humerali prominente, subinordinatim punctulata. Tibiæ intus pubescentes, nec spinosulæ.*

Oblong, peu allongé, glabre, noir bronzé opaque, antennes et pattes ferrugineuses, celles-ci à cuisses rembrunies. Tête élargie en arrière, déprimée transversalement derrière les yeux, une petite carène en dedans de ceux-ci, avec une autre très obsolète au milieu; front plan, imponctué. Yeux non proéminents, assez rapprochés en dessus. Rostre un peu plus étroit que la tête, plus long que large, presque plan, pointillé, avec une impression oblique au devant des yeux. Antennes courtes et épaisses, pubescentes de gris, à scape seul plus long que large, tous les articles du funicule brièvement transverses; massue oblongue, peu séparée du funicule. Prothorax plus long que large, subglobuleux en avant, brusquement rétréci dans son premier tiers postérieur, à pointillé très fin, espacé. Ecusson indistinct. Elytres bombées, deux fois, au moins, aussi longues que larges, subétranglées vers la base, avec les épaules marquées à calus saillant, à très fine ponctuation affaiblie à la base, un peu en séries latéralement. Cuisses renflées, inermes; tibiæ très droits

très légèrement pubescents en dedans ; tarses allongés, ongles soudés à la base.

Semble se rapprocher du *C. lævicolis*, dont je ne connais que la description, par la ponctuation des parties antérieures, la brièveté relative du rostre ; mais cette partie offre, à peine, les traces d'une carénule très obsolète, les 8 derniers articles du funicule seulement, sont transverses, les élytres sont beaucoup plus longues que le prothorax, elles ne sont pas striées-ponctuées, mais subtilement pointillées presque sans ordre ; enfin les pattes sont ferrugineuses, sauf les cuisses.

Indes méridionales. Musée de Calcutta, collection de l'auteur.*

6. APION STROBILANTHI. Long. 2·5 mill. (*sine rostro*) ; lat. 1·5 mill. *Oblongo-ovalis, nigro-æreus pube grisea in thoracis lateribus condensata, in elytris lineas fasciamque posticam formante ; antennis totis, pedibusque lœte flavis. Caput transversum, vix punctatum, oculis magnis. Rostrum elongatum, arcuatum, subcylindricum, in mare extus rufescens. Antennæ breviores, graciles, ante medium insertæ, articulis 2-primis incrassatis, clava subovata. Prothorax antice constrictus, angulis posticis subacutis, basi uni-striatus, laxe punctatus. Elytra humeris angulatis, interstitiis planis, rugulosis. Pedes sat elongati, unguiculis simplicibus.*

Ovale-oblong, noir à reflet bronzé ; antennes entièrement, pattes, moins les hanches, les genoux et les tarses qui sont rembrunis, d'un jaune clair ; une pubescence grisâtre paraissant condensée de chaque côté du prothorax, formant, sur les élytres, une bande longitudinale raccourcie de chaque côté de l'écusson et une autre subarquée vers le dernier tiers, enfin une autre parfois obsolète sur le quatrième intervalle. Tête transverse, obsolètement striolée entre les yeux, avec quelques points, lisse en arrière ; yeux grands, saillants. Rostre aussi long que la tête et le prothorax réunis, modérément arqué, subcylindrique, légèrement épaissi à l'insertion des antennes, pointillé, brillant au bout. Antennes minces insérées vers les deux tiers du rostre dans des scrobes assez courtes, à peu près de la longueur du rostre, à 2e article du funicule plus long que large, 3-7 moniliformes ; massue ovale-allongée. Prothorax subtransverse, légèrement sinué latéralement avant les angles postéri-

* Le C. TURCIPENNIS Boh. Labram et Imhoff, doit être, à mon avis, réuni au C. FORMICARIUS Fab., Olivier. Je ne trouve aucun caractère pour les séparer. Quant au C. ANGUSTATUS Labram et Imhoff, ce doit être simplement une ♀ de C. BRUNNEUS. La courte diagnose de ces auteurs n'a aucune valeur, puisqu'elle ne l'applique qu' à des caractères sexuels communs à toutes les espèces du genre ; quant à la figure, elle représente assez bien le C. BRUNNEUS. Fabricius a décrit la variété formée de l'espèce, sur un exemplaire appartenant à Olivier qui décrit, à son tour, la même variéte que je posséde en donnant une bien mauvaise figure ; mais, chez les exemplaires typiques, l'insecte est rouge presque en entier, avec les élytres bleues, ce qui le fais ressembler, à première vue, au C. FORMICARIUS.

eurs qui semblent, ainsi, aigus, brusquement rétréci vers le premier quart, subtronqué aux deux extrémités ; marqué, à la base, d'une ligne enfoncée, ponctué peu profondément sur un fond très finement alutacé Ecusson subtriangulaire. Elytres deux fois, environ, de la longueur du prothorax, beaucoup plus larges que lui, assez convexes, à épaules marquées, sillonnées-ponctuées, à intervalles plans, plus larges que les stries, densément rugueux-ponctués. Pattes assez allongées dans toutes leurs parties, ongles simples.

♂ Rostre plus distinctement pointillé, légèrement squameux, rougeâtre dans sa dernière moitié.

♀. Rostre plus lisse, noir de poix entièrement.

Sikkim. Musée Indien, collection de l'auteur.

Découvert par M. Gilbert Rogers dans les graines de *Strobilanthus.*

A place dans le voisinage de l'*A. rufirostre.*

7. CIONUS INDICUS. Long. 5·5 mill. ; lat. 4 mill. *Subsphœricus, ater, parce griseo-squamulosus, puncto atro-holosericeo infra scutellum præditus. Rostrum minus elongatum, subcylindricum, opacum, medio carinatum. Antennæ basi ferrugineæ, funiculo paulatim incrassato, clava fusiformi-incrassata, vix separata. Prothorax brevis, subconicus, dense punctatus, æqualiter convexus, lobo basali emarginato. Elytra regulariter striato-punctata, striis* 8a *et* 9a *flexis. Pedes femoribus dente lato armatis, tibiis basi curvatis. Abdomen segmentis primo et secundo elevatis.*

Arrondi, très convexe ; noir, couvert peu densément, sur les exemplaires que j'ai sous les yeux, d'une pulvéruleuse grisâtre, avec un gros point noir-velouté, sutural, vers le premier tiers. Tête subconique en avant. Yeux très-rapprochés. Rostre à peine aussi long que la tête et le prothorax réunis, vu de profil, très légèrement atténué au sommet, de même dimension en dessus, opaque, sauf l'extrème pointe ; muni d'une carène médiane effacée dans le dernier tiers, avec une ponctuation rugueuse ; antennes ferrugineuses à la base, à premier article du funicule une fois seulement plus long que large, à 2e bien moins allongé, les autres formant une tige compacte s'élargissant jusqu'à la massue, qui est épaisse et fusiforme. Prothorax court, conique en avant, densément ponctué ; légèrement convexe et égal, tronqué en devant, sinué de chaque côté du lobe basal qui est échancré. Ecusson oblong. Elytres légèrement échancrées séparément au dessous de l'épaule, faiblement avancées de chaque côté de l'écusson, à sommet subtronqué, à stries ponctuées bien marquées 8e et 9 coudées. Pattes à cuisses armées d'une grande dent peu aiguë ; tarses épaissis, à 3e article très élargi ; ongles soudés à la base, simples. Abdomen plus élevé sur les deux premiers segments, les suivants situés sur un plan infèrieur et plans, le dernier largement arrondi au sommet.

Dam-Dim. Musée Indien, collection de l'auteur.

MARMAROCHELUS G. N.

Caput gibbosum, basi non coarctatum. Oculi oblongi, distantes. Rostrum subcylindricum capite thoraceque simul sumptis non longius. Antennæ breviores, squamosæ, scapo oculos subattingente, funiculi articulis 3-primis latitudine duplo longioribus, subæqualibus, 5-7 sub-moniliformibus, clava ovata breviori. Prothorax elongatus, antice vix ampliatus medio carinatus, grosse plicatus, lobis ocularibus valde prominentibus. Elytra oblongo-elongata, humeris non callosis, ante apicem dente prædita, lineato-fossulata. Pedes modice elongati, femoribus omnibus dente obtuso armatis; tibiis latioribus, sinuatis; tarsis modice elongatis, subtus spongiosis articulo 1o *triangulari,* 2o *subtransverso,* 3o *transversim dilatato-cordiformi, unguiculari clavato squamoso, ungulis simplicibus. Coxæ anticæ subcontiguæ; abdominis segmentum primum inter coxas posteriores lobatum.*

Ce genre, par sa coloration, surtout celle des pattes et sa sculpture rappelle le genre *Ectatorhinus* dont il se distingue nettement par les lobes du prothorax qui recouvrent les yeux lorsque le rostre est abaissé, la brièveté des articles des antennes et des pattes, l'absence de saillie anguleuse avec épaules et la présence d'une forte dent aux élytres, postérieurement; enfin, par la forme tout autre du premier segment abdominal qui s'avance, en un lobe triangulaire, à pointe mousse entre les tranches postérieures, au lieu d'être coupé droit.

8. MARMAROCHELUS ATKINSONI. Long. 13 mill.; lat. 5 mill. *Oblongus subelongatus, niger, non pubescens, supra minus dense cinereo fulvoque variegatus, infra dense lutescente-squamosus, segmentis* 2-4 *medio bruneis et cinereo-uni-guttulatis. Caput valde convexum, fulvum, cinereo-*5*-notatum. Rostrum arcuatum, carinatum et a latere strigosum, rugoso-punctatum. Antennæ articulis funiculi submoniliformibus, clava subovata. Prothorax subquadratim elongatus, medio carina lævi præditus, profundissime strigosus, angulis posticis acutis divaricatis. Elytra oblonga, humeris obliquis, grosse serie-foveata, interstitiis angustissimis, apice breviter uncinata; plaga humerali, altera post medium, trifoliiformi, dente que subapicali, luteis. Pedes cinereo-annulati.*

Oblong, noir, recouvert, en dessous, d'une squamosité uniforme flavescente, passant au brunâtre sur le milieu de l'abdomen, avec un point de couleur claire sur le milieu des trois ou quatre derniers segments; en dessus moins densément squameux, varié de cendré et de fauve, ayant, notamment, une bande large, mal limitée sur les côtés du prothorax, sur les élytres, une tache humérale irrégulièrement carrée, une autre suturale, après le milieu presque en forme de trèfle; les pattes marbrées des mêmes couleurs. Tête très convexe, re-couverte d'une squamosité roussâtre, marquée, entre les yeux, d'une tache semblant formée de deux taches réunies, d'une autre mediane en arrière et de

deux autres à l'angle postérieur de chaque œil, blanchâtres. Rostre atteignant le niveau des tranches intermédiaires, modérément courbé, étranglé contre les yeux, très légèrement épaissi vers les antennes et au sommet, caréné au milieu jusqu' à l'insertion de celles-ci, ridé de chaque côté, squameux et fortement ponctué à la base, brun de poix. Antennes noires, squameuses, avec quelques cils dressés grisâtres. Prothorax au moins aussi long que large, à peine arqué latéralement en avant, légèrement sinué en dehors des angles postérieurs qui sont aigus, rétréci vers le tiers antérieur, chargé d'une ligne médiane longitudinale raccourcie à la base et sur tout le reste du segment de rides grossières ménageant entr'elles de profondes cavités remplies, en partie, par la squamosité: tous ces reliefs très-brillants, paraissant imponctués; bord antérieur presque droit en dessus; base sinuée de chaque côté du milieu. Ecusson oblong saillant. Elytres plus larges que le prothorax, à épaules obliquement arrondies, presque parallèles dans leurs deux premiers tiers, moins du double plus longues que larges, légèrement impressionnées au dessous de leur bord basilaire, atténuées dans leur dernier tiers; marquées de grosses fossettes disposées en lignes longitudinales. Pattes annelées de roux et de cendré, avec les peignes des tibiæ noirs; cuisses fortement échancrées en dedans, à bord de l'échancrure figurant une dent obtuse. Dessous à points peu nombreux, très gros et écartés sur le mésosternum.

Iles Andaman. Musée Indien, collection de l'auteur. Je dédie cette belle espèce à M. Atkinson, auteur de nombreux travaux sur les insectes de la région Indienne.

9. RHINA LINEATA. Long. 20-22 mill. (*Rostro excluso*); Lat. 7-8 mill. *Elongata, cylindrica, nigra, subglabra. Caput minutum, subconicum. Rostrum thorace brevius, rectum, ad antennas valde incrassatum, bi-serie-serratum, infra villosum,* ♂; *vix incrassatum, nec tuberculatum, inter antennas depressum, utrinque serie-foveolatum, infra haud villosum,* ♀. *Antennæ breviores, articulis funiculi* 5-6 *rotundatis. Prothorax ante basem constrictus, angulis posticis subrectis, non villosus, profunde reticulatus. Elytra brunnea, vitta dorsali, altera externa interrupta, maculisque elongatis* 1-*intrahumerali,* 3-*subapicalibus transversim digestis, flavis. Tibiæ anticæ, intus, parce denticulatæ, longe fulvo-fimbriatæ* ♂, *setis rigidis præditæ* ♀.

♂, cylindrique, noir, presque mat, en dessus, assez luisant, en dessous, surtout sur le métasternum. Tête subconique, sillonnée, rugueusement ponctuée. Rostre droit, plus court que le prothorax, dilaté à l'insertion des antennes, à côtés parallèles dans la partie atténuée qui n'est guère plus longue que le tiers du segment, muni d'un sillon élargi en avant, flanqué d'une double rangée de tubercules, avec quelques uns

plus forts en avant et en arrière des antennes; grossièrement ponctué, terminé par une pointe lanciforme; à squamules éparses, jaunâtres, dans les cavités; muni en dessous, d'une touffe de poils jaunes; ne débordant pas latéralement les côtés. Antennes raccourcies, à poils squamiformes, courts; scape égal en longueur au reste de l'antenne; 1er article du funicule subconique, plus court que 2 qui est allongé, 3-6 subégaux, moniliformes; massue allongée, subelliptique, au moins de la longueur des 4 articles précédents, squameuse de gris, avec quelques poils fins dressés. Prothorax aussi long que large, peu arrondi latéralement, subétranglé tout à fait au sommet, rebordé étroitement, sensiblement comprimé à la base, avec les angles postérieurs semblant aigus, par suite d'une sinuosité inférieure; criblé de fossettes égales confluentes, squamigères, sans trace de sillon ni carène. Ecusson triangulaire, squameux. Elytres à peine plus larges que le prothorax, un peu plus longues que deux fois sa longueur, un tant soit peu atténuées en arrière; à séries de points peu rapprochés sur le dos; intervalles plans, à peine pointillés, avec des squamules sériées par place; ornées d'une bande flave squameuse longitudinale, par fois interrompue, sur le 2e intervalle; d'une autre plusieurs fois interrompue sur le 7e et de quelques taches allongées, les premières situées entre les deux précédentes, l'autre vers l'épaule. Pattes antérieures à cuisses coudées à la base, peu ponctuées, à tibias courbés en dedans dans leur derniére moitié et munies d'une large frange de poils roux, sous laquelle on distingue sept ou huit fortes dents aiguës; antérieurs et intermédiaires sillonnés en dessous; tarses à article premier un peu plus long que large, triangulaire, unguiculaire de la longueur des deux précédents. Dessous ponctué-serré assez fortement, moins densément sur le milieu de l'abdomen, sans poils dressés, muni, seulement, au bord antérieur du prosternum d'une frange de poils roux; des points squamigères assez écartés sur la poitrine qui est brillante; métasternum marqué d'un faible sillon continué sur le premier segment abdominal, sans impression.

♀. Diffère du ♂ par la forme un peu plus large et les élytres plus obtusément arrondies au sommet; par le rostre plus court, peu rugueux au milieu, presque sans tubercules, avec une dépression intra-antennaire et une série de fossettes transversales de chaque côté; sans poils en dessous; par les tibiæ antérieurs n'ayant, en dessous, qu'une série de poils raides.

Iles Andaman. Musée Indien, collection de l'auteur.

II. BRENTHIDÆ.

10. Megacerus quatuor-dentulus. Long. 20-22 mill. (*rostro excluso*); Lat. 4·5 mill. *Elongatus, subcylindricus, subopacus, colore et notis*

M. POGONOCERO *affinis. Caput postice subfoveolatum. Antennæ, articulis ultimis exceptis, subglabræ. Prothorax in utroque sexu antice conicus, sublevis, latitudine longior. Elytra punctis striarum subrotundis, interstitiis convexis, apice bisinuata, extus brevissime dentata.* ♂ *Caput transversum, lateribus inflatum ac crenulatum. Rostrum sulcatum, rugosum, supra, post medium bidentatum, margine exserta crenulata. Antennæ articulis longissimis, filiformibus. Femora antica longe spinosa.* ♀ *caput sat elongatum, subconicum; rostrum cylindricum, subrectum, capite prothoraceque simul sumptis, subæquale. Femora omnia breviter dentata.*

Facies du *M. pogonocerus* Fairm., bien distinct par la structure du rostre en dessus et en dessous, par l'épine apicale externe des élytres très-courte, par la faible ponctuation des parties antérieures; par la longue épine des cuisses antérieures, par la longueur des articles antennaires et l'absence de pubescence dans leur première moitié. Brun ferrugineux, presque mat, antennes et pattes plus claires, à pubescence obsolète formée de petites soies extrêmement courtes. ♂ Tête transverse, presque lisse jusqu'aux yeux, arrondie et crénelée latéralement. Yeux assez saillants. Rostre de la longueur du prothorax, à sillon longitudinal lisse, à granulations aiguës de chaque côté, moins serrées à partir du renflement sus-antennaire, qui est armé, de chaque côté, d'une petite épine, épaissi, de nouveau, en une forte dent, étranglé, ensuite, avec la lame inférieure des scrobes saillante, denticulée et terminée antérieurement par une dent plus forte, puis élargi en triangle surmonté, de chaque côté, d'une crête crénelée terminée en dent redressée; muni, en dessus, d'une carène unique très saillante, glabre, tuberculigère. Antennes plus longues que les deux tiers du corps, glabres à la base, avec quelques poils dressés sur le dernier article; 1er article finement denticulé en dehors, 2e un peu plus long que 3e; 4-9 cinq ou six fois plus longs que larges: tous munis de hachures longitudinales. Prothorax plus long que large, conique dans ses deux tiers antérieurs, marqué de deux plis transversaux antérieurement, marginé à la base, très obsolètement pointillé. Elytres ornées d'une bande longitudinale non prolongée de chaque côté de l'écusson, d'une autre petite à l'épaule, de cinq ou six taches placées irrégulièrement et transversalement après le premier tiers, enfin d'une autre bande arquée vers les deux tiers formée de quatre taches, avec quelques autres obsolètes au sommet, toutes d'un jaune clair; à peine rétrécies dès la base, brusquement comprimées avant l'extrémité, ce qui rend les stries contournées en cet endroit, fortement trisinuées au sommet avec une dent peu aiguë au côté externe pas plus avancée que l'extrémité suturale qui est tronquée obliquement et muni, en dedans, d'une très petite épine; à stries marquées, dans leur première moitié, de gros points arrondis, serrés; intervalles convexes, non costiformes.

Cuisses faiblement renflées, avec une trainée de duvet doré en dessous, sinueuses ainsi que les tibias, les antérieures armées d'une longue épine aiguë, les autres d'une dent courte. Dessous à faible ponctuation, éparse sur le prosternum, 3e et 4e segments totalement, côtés externes du 5e et bords réfléchis correspondants des élytres roux-tomenteux.

♀. Rostre aussi long que la tête et le prothorax réunis, à antennes plus courtes, à front ridé, à dent externe du sommet des élytres plus obtuse; cuisses antérieures. armées, comme celles des autres paires, d'une courte dent.

Iles Andaman. Musée Indien, collection de l'auteur.

PSEUDOCYPHAGONUS. N. G.

Caput breve, basi ante collum subbulbiformem cæsum fronte latissime, infra, profunde excavatum, et lateris utrinque exsertim dentatis ; oculis subdeflexum, Rostrum brevissime transversum, postice ampliatum, valde rotundatis. apice profunde emarginatum, capite angustius. Mandibulæ crassæ, breves, intus curvatæ, apice subbifidæ. Antennæ crassæ, in scrobibus intus parum approximatis, insertæ. Prothoraæ elongatus, medio rotundato-ampliatus, antice attenuatus et a latere haud profunde compressus. Scutellum nullum. Elytra subcuneata, sulcato-clathrata, apice acuminata.

Pedes simplices: femoribus posticis cæteris non magis incrassatis, abdominis apicem non attingintibus; tibiæ triangulariter ampliatæ, anticis apice unco valido recurvo armatis; tarsis gracilibis articulis elongatis.

Prosternum medio utrinque angulatum, processu longitudinaliter caniculato, a latere marginato. Abdomen basi truncatus, segmentis primis canaliculatis.

Ce nouveau genre appartient à la tribu 1 et au groupe I du système de Lacordaire, *Genera* p. 405-407. Les divers genres compris dans ce groupe par ce savant se distinguent du nôtre par les principaux caractères suivants: *Calodromus*, par la longueur excessive du 1er article des tarses. *Zemioses*, par les tarses courts, à 4e article très gros aux pattes postérieures. *Sebasius*, par les scrobes très rapprochées sur le front pour l'insertion des antennes. *Cyphagonus*, par le rostre au moins aussi long que la tête.

Ces quatre genres ont les cuisses prolongées au delà de l'abdomen. *Anisognathus*, filiforme, par la tête très allongée et par la forme des mandibules du ♂. *Taphrodères*, par le rostre très allongé, par le 1er article des tarses des quatre pattes postérieures au moins aussi long que la jambe et par les élytres lisses avec un sillon unique juxta-sutural.*

* Quant au genre APROSTOMA Guérin, il a été réuni, avec raison, aux CLAVICORNES groupe des COLYDIIDES. Guérin lui-même avait reconnu son erreur, car j'ai trouvé le type de l'*A. filum* non dans la collection des BRENTHIDES de cet entomologiste, dont

Le caractère si remarquable de l'excavation de la tête à bords latéraux tranchants et coupés en avant en se terminant par une dent, suffirait, du reste, à lui seul pour le faire reconnaître.

11. PSEUDOCYPHAGONUS SQUAMIFER. Long. 9-12 mill, lat. 2-2·25 mill. *Oblongus, brunneus, pedibus ferrugineis, impubens parcissime luteo-squamosus. Caput transversum, convexum, subquadratum, punctatum, medio foveolatum. Rostrum latum, brevissimum, curvatum, apice emarginatum, punctatum. Antennæ articulis funiculi* 3-7 *sublenticularibus,* 8-9 *transversim quadratis. Prothorax basi et apice attenuatus, ante apicem rugoso-impressus, in disco, postice, utrinque obsolete angulatus. Elytra thorace non duplo longiora, elongato-subconica, rubro-maculata. Tibiæ clavatæ; tarsi breviores. Abdomen segmentis ultimis crebrius punctatis.*

Oblong, brun, pieds roux, marqué sur les élytres, de quelques taches rougeâtres mal définies, notamment à l'épaule, vers le premier tiers, et avant le 2e tiers de la longueur. Tête brusquement tronquée en arrière avec un assez large bourrelet à la base, souvent rougeâtre ainsi que le rostre, ponctuée moins densément au milieu, avec une fovéole frontale; yeux subarrondis, peu saillants. Rostre très entamé latéralement par les scrobes, antérieurement, par une profonde échancrure, plus étroit que la tête, fovéolé entre les antennes, ponctué. Antennes légèrement squameuses, à 2 article irregulièrement triangulaire, anguleux en dedans, 3-8 sublenticulaires, 9-10 presque carrés, massue subconique. Prothorax presque aussi rétréci à la base que vers le tiers antérieur qui forme une sorte de cou à côtés subparallèles, peu convexe, à ponctuation écartée, avec une impression antérieure rugueuse, une petite saillie dentiforme de chaque côté, avant la base; extrémités du segment présentant les traces d'une bande squameuse latérale qui peut être entière chez les exemplaires plus frais. Elytres subcunéiformes, à calus huméral élevé, à sillons très rapprochés, munis de points carrés, avec les intervalles alternes parfois plus saillants. Pattes allongées. Dessous ponctué peu densément, sauf les derniers segments abdominaux, le dernier surtout pubescent.

Le ♂ diffère de la ♀ par les antennes très épaisses à articles fortement transverses et le prothorax plus dilaté.

Iles Andaman. Musée Indien, collection de l'auteur.

12. MIOLISPA CEYLONICA. (♀) Long. 9·5 (*rostro excluso*); lat. 2·5 mill. *Elongata, subcylindrica, minus depressa, ferruginea, elytris*

j'ai fait l'acquisition, mais dans celle de ses CLAVICORNES qui m'est revenue plus tard. L'opinion que s'était faite Lacordaire du genre en question est donc erronnée quand il dit "je suis porté à croire que ce genre a été établi sur la ♀ d'un insecte très voisin des *Anisognathus* et qui n'en diffère même que peu, génériquement parlant." Il doit être retranché des BRENTHIDES du Catalogue Gemminger et de Harold, ainsi que de la liste des espèces de cette famille décrites depuis et relevées par M. Donckier de Donceel, Soc. Ent. Belg., 1884, cccix.

basi vitta suturali et in utroque maculis 3-nigris ornata. Caput subquadratum, basi truncatum, medioque incisum. Rostrum rectum, cylindricum, lævissimum, basi valde incrassatum, supra foveolatum. Antennæ validæ, paulatim incrassatæ, articulo primo solo elongato. Prothorax elongatus, a latere posterius supparallelus, antice attenuatus, creberrime rugoso-punctatus, canali longitudinali integro. Scutellum indistinctum. Elytra humeris rectangulis ante apicem compressa, sulcato-punctata, interstitiis anguste elevatis. Femora clavata, inermia.

♀. Subcylindrique, d'un brun clair, avec les pattes rouge-ferrugineux, ainsi que les élytres; sur celles-ci, une bande suturale basilaire et sur chacun une tache humérale allongée et deux bandes partant du bord extrême, n'atteignant pas la suture, l'une submédiane, l'autre après le deuxième tiers, noires. Tête en carré transverse, tronquée en arrière, échancrée au milieu du bord, avec les angles latéraux saillants. Yeux peu proéminents. Rostre droit, cylindrique, lisse, sa partie dilatée occupant, environ, le tiers du segment et marquée d'une fossette allongée. Antennes à articles 2-7 en carré transverse, 8-9, en carré aussi long que large, massue du double plus longue que large. Prothorax plus long que large, à peine arqué latéralement, peu rétréci à la base, devenant conique en avant. Ecusson nul. Elytres légèrement convexes, subparallèles, comprimées avant le sommet d'où les interstries comme brisés à cet endroit; terminées par une sorte de rebord formé par la réunion de la saillie suturale au 7e intervalle; sillonnées-ponctuées. Pattes inermes; tibiæ antérieurs munis d'un fort éperon en dehors; tarses très allongés.

Ceylan. Musée Indien, collection de l'auteur.

Ma collection renferme deux autres espèces du même genre, de la nouvelle Guinée et provenant de la collection de BRENTHIDES de Guérin Méneville qui fait actuellement partie de la mienne. L'une portait une étiquette de sa main ainsi conçue: "*Brenth. nova guineensis* Guér. Voy. de Duperray nov. gen. (à oreilles)." L'autre m'a été désignée, par M. Power, sous le nom de *exarata* Dej. La première (♂), a la tête étroite, en carré-long, le prothorax, la tête et le rostre sillonnés, celui-ci de un tiers plus long que la tête et un peu dilaté au sommet, le prothorax dilaté subanguleusement dans son milieu latéral; les élytres sont ornées d'une bande flave étroite, le long du 2e interstrie; les tarses sont courts et épais. La deuxième, ♂ également, a la tête presque carrée sillonnée ainsi que le rostre et le prothorax, mais non d'un bout à l'autre avec la portion du rostre en avant de la dilatation aussi longue que la portion basilaire; le prothorax en légèrement dilaté; les élytres sont ornées d'une bande jaune longitudinale au milieu, les tarses sont déliés: enfin les côtés du dessous, à l'exception des derniers segments abdominaux, sont munis d'une bande formée par un épaix duvet squameux-argenté.

Ces caractères suffisent pour distinguer ces deux espèces de la nôtre indépendamment de la taille.

XII.—*On some new and little known Hot Springs in South Bihar.*—*By* L. A. WADDELL, M. B., *Indian Medical Service.*

In the southern portion of Bihar, amongst the hills—a Gangetic prolongation of the great Vindhaya range—forming the natural boundary between Bihar and Deltaic Bengal, are numerous hot springs, several of which have already been described in more or less detail. Others again, situated in wild and almost inaccessible localities, have merely been mentioned by name, on casual hearsay report, the exact sites and other particulars remaining undetermined, while some have altogether escaped notice. The present paper deals mainly with those falling under the last two categories.

Of the hot springs here described nine do not appear at all in Mr. Oldham's descriptive List of Indian Hot Springs, published in 1882,* which is now the *locus classicus* on this subject; but Mr. Oldham had omitted from his list one of these hot springs which had long ago been recorded by Dr. Buchanan in his Survey of Bihar.†

For brevity as well as contrast, I present the observations as far as possible in tabular form. The springs belong to two natural series, *viz.*, *(a)* those (Nos. 1 to 8) situated along the southern flank of the hill-range of the Santál Parganas, and (*b*) those (Nos. 9 to 15) situated in the Mungir (Monghyr) district among the so-called Kharagpur hills. I may state that the elevations were ascertained by hypsometrical observations, while the latitude and longitude were obtained by carefully fixing the position of the spring with reference to the surrounding villages on the large scaled (4 miles to the inch) Survey of India map.‡ The temperatures are recorded in degrees of the Fahrenheit scale. The thermometer used for the temperature of the spring-water had recently been compared with a standard thermometer. The names of the springs and adjoining villages have been spelt according to their local pronunciation.

* *Thermal Springs of India*, by the late T. Oldham, LL. D., F. R. S., &c. Edited by R. D. Oldham. Memoir Geolog. Surv. of India, Vol. XIX, pt. 2, Calcutta, 1882.

† *Eastern India*, II, 197. Most of the details regarding the Bihar hot springs quoted by Dr. Oldham as from Captn. Sherwill's Report (J. A. S. B., XXI), had already been recorded by Dr. Buchanan.

‡ The correction of − 1′·21″ for longitude noted on the map was not taken into count.

TABLE I.

Serial No.	Name of Spring.	Geographical Position.					Geological Position.	Height in feet above Sea.	Temperature of Spring.	Temperature of Air.	Temp. of adjoining pool or stream.	Sulphurous or not.	Worshipped or not.	Date of Observation.	Previously recorded or not.
		Nearest village.	Thana Police circle.	District.	Lat. of Spring	Long. of Spring									
					° ′	° ′									
1	Láu-láu dáh.	Síbpur	Mahesh-pur	Santal Pargá-nas.	24 22	87 43	Lateritic hollow in trap with quartzose grit near.	46	122°	76°	79°	Slightly	Yes	2-12-89	Not
2	Bárámasía.	Birki	,,	,,	24 28	87 42	A trap-dyke in limestone.	33	93°	61°	62·5°	Not	,,	4-12-89	Not
3	Jharíya páni.	Gopikándor	Dumka	,,	24 27	87 31	Junction of gneiss and coal.	407	93°	69·2°	76°	Not	,,	5-12-89	No elevn. given & different temp.
4	Tát-loi.	Palási	,,	,,	24 23	87 16	Gneiss with sand-stone not far off.	484	148·5°	59°	58°	Slightly	,,	9-12-89	No elevn. given
5	Nunbíl.	Kendghatta	,,	,,	24 05	87 13	Junction of sand-stone and quart-zose grit.	127	119·6°	69°	72°	do.	,,	11-12-89	Not visit-ed.
6	Tápat páni.	Hetbeliya	,,	,,	24 12	87 19	Conglomerate out crop.	126	102°	65°	62°	do.	,,	11-12-89	do.
7	Su-sum páni.	Bághmára, Kumrabád	,,	,,	24 09	87 21	do.	122	84°	64°	61°	do.	,,	12-12-89	Not

TABLE I.—*Continued.*

Serial No.	Name of Spring.	Geographical Position.					Geological Position.	Height in feet above Sea.	Temperature of Spring.	Temperature of Air.	Temp. of adjoining pool or stream.	Sulphurous or not.	Worshipped or not.	Date of Observation.	Previously recorded or not.
		Nearest village.	Thana Police circle.	District.	Lat. of Spring	Long. of Spring									
					° ′	° ′									
8	Bhumka.	Rápibáhal	Mungir	Santal Parganas	24 04	87 25	(No rocks visible near.)	112	82°	61°	62°		Yes	13-12-89	Not
9	Singhi Ríkh tatal páni.	Singhoul	,,	Mungir	25 08	86 18	Quartzite dislocation.	579	90·5°	61°			,,	4-1-90	Not
10	Pánchbhúr.	Kachua	,,	,,	25 06	86 21	Quartzite.	329	84·4°	63°		Not	?	4-1-90	Not
11	Tatal páni.	Bhímbhánd	Kharagpur	,,	25 04	86 28	do.	314	146·1°	63°		Slightly	Yes	7-1-90	Recorded by Buch. &c.
12	Síta Kund.	Sitalpur, Mungir	Mungir	,,	25 22	86 36	do.	...	137° 136°	68° 72°	67°	Doubtful	,,	11-1-90 5-3-90	do.
13	Garm páni.	Barde	,,	,,	25 22	86 35	do.	...	137°	68°		do.	No	11-1-90	Not
14	Báiṇsa Pahár do.	do.	,,	,,	25 22	86 37	do.	...	102°	72°		Not	,,	5-3-90	Not
15	Bhaduria bhúr.	Daryápur	Jamalpur	,,	25 16	86 34	do.	101	98·5°	67°		Not	,,	6-3-90	Doubtful

Láu-láu-dáh is the Santáli name for 'hot water.' This spring is situated in a slight hollow in lateritic soil near the bank of a small stream called the Boru *nadi*, about half a mile north-west of Sibpur village in the Pákur subdivision of the Santál Parganas. No rock is visible in the immediate neighbourhood, but the surrounding country is undulating with occasional outcrops of trap and quartzose grit. The spring is very copious; I roughly measured the outflow at about 26 gallons per minute. This copious outflow in a somewhat sandy tract of soil has resulted in a small crater or basin-like depression from the centre of which the spring issues. The depression is about 3 feet deep and at its margin about 10 feet in diameter. Profuse discharge of gas bubbles forth. The gas has a slightly sulphuretted odour, it is not inflammable, and no perceptible blackening of a silver coin ensues after immersion for two minutes in the spring. A small quantity of flaky sulphurous looking* precipitate is deposited along the course of the outflowing stream. A few tufts of confervoid growth grow within the spring at a temperature of 122° F.; but these become much more profuse along the stream. The spring itself and its outflowing channel for many yards are apparently devoid of large animal life, and contain numerous macerated bodies of frogs and other small animals which have perished in attempting to cross the hot water: in front of me, a frog in the endeavour to escape leaped into the stream and was instantly killed by the hot water. The water has a slightly saline taste, with a neutral reaction. By the side of the spring are the ruins of a small temple to Síb (from which the adjoining village derives its name). An isolated pool of water only three yards above the spring has a temperature of 79° F. The spring is perennial; its water is not drunk.

Bárámasia in Hindi† signifies literally 'of 12 months,' and the spring is so called because it flows throughout the 12 months of the year. The Santals call it 'Bhumuk.' The spring appears close to an outcrop of trap in a limestone; it issues in two places about 4 feet apart, and the discharge is only about one-third of the above described spring. It has no sulphurous odour; the few gaseous bubbles discharged are not inflammable and do not support combustion; silver is not blackened on short immersion; the reaction is neutral. Small fish-fry and ordinary waterweeds and confervæ are abundant. The water is used for drinking and bathing. Mahadeva is worshipped here. The temperature of a cold spring 20 yards off is 62·5° F.

* A similar looking deposit from another hot spring was very kindly analysed by Dr. Warden, the Chemical Examiner, with the result of showing that it consisted of "free sulphur, sulphuric acid, iron and siliceous matter."

† The Hindus here, living on the border between Bihar and Bengal, speak a mixture of Hindi and Bengali.

Jhariya is a Santáli form of the colloquial Hindi *jharna* (Sanskrit *jhar*) a spring or cascade. This spring is situated at the eastern end of a marsh fed by it. It is recorded under the name of 'Jervapani' in Mr. Oldham's list, with a temperature of 87° F. I found by wading into the marsh, the temperature to be 93°, while a streamlet about 100 yards off was 76°. The outflow is copious.

Tât-lŏi, also called *Tât-nŏi*, is a Bengali corruption of *Tapta nadi* or the hot rivulet.'* This spring is well named, as its outflow is so very copious that it produces at once a large stream. It emerges about 50 yards from the left bank of the Bhúrbhúri river near the village of Palási, from numerous chinks, in the rocky gneissic bed of a small streamlet. These chinks, giving vent to the spring, extend over an area of about 20 × 2½ yards. In the cool winter morning the position of the spring is indicated by the dense clouds of vapour hanging over it and also along the issuing stream for several hundred yards. The water has a decidedly sulphuretted odour, but it did not perceptibly blacken a silver coin on two minutes immersion. A good deal of flaky deposit is found in the bed of the stream, and confervæ grow even at the hottest parts of the spring where the temperature is 148·5° F. Ten yards above the spring the temperature of the streamlet is 58° F. and the aerial temperature is 59°. The highest temperature recorded in July 1882 by Mr. Oldham was 145°;† while Dr. Buchanan found the temperature to be 148° F. on the 28th October *circa* 1809.‡

Nun-bíl or the 'saline marsh' is a small marsh containing several hot springs of a sulphurous nature, and the sulphurous deposit accumulating in the marsh appears to have given rise to this name. The chief spring is found where an adjoining rivulet has cut away the soil near a border of the marsh. At the time of my visit this spring was not visible in the sandy bed of the stream; but an old resident indicated a spot where on digging to a depth of about two feet a spring feebly welling up was reached. Another hole was dug about a yard above this one, and reached a more copious spring with hotter water. This point is in the river bed 17 yards distant in a direct line, 3° east of North (magnetic), from the large *sál* tree on the river bank sacred to the goddess of the spring. At first the temperature only rose to 113° F., but on cutting a

* In colloquial Bengali the sun's heat (*tapta*) is ordinarily spoken of as *tât*, and hot rice is called *bhát tâta*. The word *nadi* in Bengali is indifferently pronounced *nŏdi* or *lŏdi*, the *n* and *l* being always interchangeable, and the short *a* acquiring in Bengali an *ŏ* sound; moreover the *d* is occasionally dropped from this word, *e. g.* in Baraloi and Bánsloi, the names of rivers in the adjoining districts of Bírbhum and Rájsháhi.

† *Op. cit.*, p. 43. ‡ *Loc. cit.*, p. 198.

channel to allow of the free escape of the water the temperature rose in 15 minutes to 119·5° F. A considerable ebullition of slightly sulphuretted gas occurred. A silver coin on immersion for five minutes was very slightly discoloured. The rock in the neighbourhood is sandstone and quartzose grit intersected by trap.

Two more hot springs are reported to occur about half a mile further down the course of this river (here called Nun-bîl *nadi*) but the temperature is reported to be not more than that of the springs in the *bîl* which I found to be 100·5° F.

The direction of the Nun-bîl spring given by Sherwill from native, information, and for which he gives latitude and longitude, is most inaccurate and misleading. Dr. Buchanan on the other hand elicited its true position approximately.* It lies 9½ m. south-west of Kumrabad, near the village of Kendghata.

Tapat-páni, a colloquialism for *tapta páni* or 'hot water,' is the name of a small sulphuretted spring on the left bank of the Mor river near the village of Hetbeliya, about 1¼ miles north of Kumrabad. It issues from a sandy pool below a lateritic stratum and near an outcrop of coarse conglomerate. The outflow is only about two gallons per minute. Sulphuretted fumes are given off, and the pool and its outflowing channel contain a considerable quantity of yellowish flaky deposit, evidently sulphur. The temperature of the spring is 102° F., while that of the Mor river, about 10 yards off, is 62° F.

Susum-páni means 'tepid water' in the vernacular. This spring is situated about 3 miles S. E. of the last noted spring and close to the village of Bághmára, on the opposite bank of the Mor river, in a small marsh, which is in line with another outcrop of coarse conglomerate dipping to the N. W. The temperature of the spring is only 84° F., but it is said to have been formerly much hotter. The temperature of a small stream 15 yards off is 62° F. No sulphurous odour is perceptible, and the outflow of water is sparse.

Bhumka, apparently the same name as '*Bhumuk*' applied by the Santals to the first noted spring and apparently related to the Hindi *bhumi* earth, is situated in a small marsh on the right bank of the Mor river a quarter of a mile from Ránibáhal village. It seems an instance of a hot spring which has regressed. It has the reputation of having been hot till quite recently—the village headman of Ránibáhal who led me to the spot seemed surprised that the spring was not decidedly hot. Its deity, called '*Bhumka burhî*,' is still worshipped at the place by the Mal Paharias from the hill three miles off, who call the spring '*Choto Nun-bîl*'

* *Loc. cit.*, p. 200.

to distinguish it from 'the great' Nunbîl already described. The outflow is scanty and there are no sensible sulphuretted fumes.

Singhi Rîkh tatal páni, or the 'hot water (at the shrine) of Rishi Singhi,' is a copious hot spring in a gorge among the Singhoul hills. It issues in 6 or 7 places from below a high cliff of quartzite and at once forms a considerable stream which lower down is called *Dahina dah* by the Koṛa hillmen. No sulphuretted smell is perceptible. The water is drunk. A temple to Mahadeva and a *kund* for bathing have been erected at this highly picturesque site—which is a favourite place of pilgrimage, especially on the *Síb-ratri* festival in February.

Pánch-bhúr, or the 'five chinks or clefts,' is a spring which emerges in five streamlets amidst masses of quartzite rock, from a small hill about 3 miles east of the highland village of *Kachu*. The water is heard flowing for some distance underneath the decomposed quartzite. On coming to the surface it has a temperature of only 84·5° F.

The *Tatal-pani*, or 'hot water' spring of Bhímbhand, are well characterized by Dr. Buchanan* as "by far the finest in the district." The highest temperature recorded by Dr. Buchanan *circa* 1809 was 150° F.; Sherwill in 1854 found it 147°. In January of this year the highest temperature found by me was 146·2° F. The water can be heard flowing under the masses of quartzite debris, so that the temperature a few feet further in would be doubtless higher. A very faint sulphuretted smell is perceptible and in the stream-bed is a slight deposit of light yellowish flaky material—this formed such a thin coating over the stones and confervoid growth, that I could not obtain a pure sample of it. Dr. Buchanan calls it 'siliceous tufa'—he found it did not effervesce with nitric acid. It appeared to me to be sulphurous. No blackening of a silver coin occurred after immersion for 5 minutes.

Síta-kund, or 'Síta's well' or pond, where according to the legend Síta bathed after passing through the fiery ordeal, and so imparted to the water the heat she had absorbed from the fire, is a not uncommon name for hot springs in India. This particular one near Mungir is well-known, and only figures in this list in order to exhibit my observations on its temperature, &c.

The *garm-pani*, or 'hot water,' of Barde village is practically a branch of the above-noted *Síta-kund* hot spring. It is found on the bank of a pond in the Moslem village of Barde, about 300 yards N. W. from Síta-kund. In January it had exactly the same temperature as Síta-kund, *viz.*, 137° F. Owing to its unholy situation it is not worshipped; and is only visible as a surface spring in autumn and winter; in

* *Loc. cit.*, p. 200.

March when I revisited the spot no spring was visible, and on digging down two feet the temperature of the water found only registered 103° F.

Báinsa pahár hot spring is also to be regarded as an offshoot from Sîta-kund, from which it is distant about one-third of a mile in a south-easterly direction. These three last springs lie almost in a straight line —Síta-kund being in the middle. This spring emerges from a fissure in quartzite rock at the base of the small hill of Báinsa which also consists of similar rock. At my visit in March it was a sluggish spring in a puddle polluted both by men and cattle. No sulphuretted smell was perceptible. The water is only drunk by cattle.

Bhaduria bhúr, or the 'cleft of Bhaduria' hill, is a hot spring which is locally believed to be a branch of Rishi-kund hot spring about two miles further E. S. E. on the other side of the range of hills. The spring, which is much cooler than Rishi-kund, emerges at the foot of Bhaduria hill from amongst masses of quartzite rock accompanied by a free discharge of gaseous bubbles, devoid of smell and uninflammable. The water is drunk by men and cattle. Much confervoid growth is present. This seems to be the spring described by Buchanan* as "about five or six miles south from Sita-kunda, at the western foot of the ridge running south from Mungger and at a place called Bhurka." The spring, however, is over seven miles from Sita-kund, and its temperature at my visit was 98·5° F., compared with the temperature of 112° given by Buchanan.

The names of these hot springs, it will be seen, are all trivial, usually meaning simply 'hot water.'

The *Chemical Composition* of the water and of the gaseous contents of the springs could not be very fully ascertained, owing to the great difficulty of properly collecting and carrying off from such remote places a sufficient quantity of material for analysis. In only four instances was I able to collect and safely transport suitable samples of the water, which Dr. Warden, the Chemical Examiner, has very kindly analysed with the results shown in the accompanying table:—

* *Loc. cit.*, p. 197.

TABLE II.

Serial No.	Name of Spring.	Results of Analysis expressed in Parts per 100,000.												
		Total solid matter.	Chlorine.	Free Ammonia.	Albuminoid Ammonia.	Nitrogen as Nitrates and Nitrites.	Hardness in Clark's scale.			Nitrates.	Nitrites.	Behaviour of solid residue on ignition.	Sulphites.	Iron.
							Total.	Temporary.	Permanent.					
1	SíbpurLáu-láu-dah	32·72	5·3	·008	·004	·034	1·0	...	1·0	Trace	*Nil*	No blackening	Present.	?
2	Báramasia.	36·4	1·6	·02	·0048	·029	21·0	12·5	8·5	Trace	*Nil*		do.	?
11	Síta-kund.	19·46	2·46	·0024	·004	·12	9·0	5·5	3·5	Trace	*Nil*		Trace	Trace
15	Bhaduria-bhur.	13·6	0·52	·0032	·0032	·06	7·0	5·0	2·0	Present.	Present.		Present.	*Nil*

Of the mineral matter of No. 1 sample a considerable proportion seems likely to be chloride of sodium, owing to the large proportion of chlorine and the very slight hardness of this water. In No. 2 sample, the extreme degree of hardness is accounted for by its traversing a lime formation—it seems to contain an excess of carbonate and also of sulphate of lime. The Sita-kund water appears to contain chloride of calcium and perhaps sodium. The absence of blackening of the solid residue on ignition indicated the absence of organic matter from all of the samples. All contained sulphur in the form of sulphates.

The gas evolved at the springs has when sensibly odorous or otherwise been noted in column 13 of Table I—very slight traces of sulphuretted hydrogen are detectable by smell. Nitrogen is a gas which is evolved from hot springs in much greater quantity and more frequently than sulphuretted hydrogen,* but samples of the gas evolved could not be collected for analysis: one characteristic of nitrogen is that it does not support combustion; and in every case the bubbles of gas from the springs extinguished a light, but the bursting of the bubble on the surface would of itself tend to blow out the light. Carbonic acid is occasionally evolved from hot springs—in the last two samples it could not be present in any quantity, judging from the absence of pungency in the taste of these waters: no direct test by lime or otherwise was resorted to: in every case the waters were neutral to test-paper.

* Daubeny on *Volcanos*, p. 558.

In many of the springs the gaseous discharge was so great as to agitate and spurt about the water as if it were boiling.

Very few of the European hot springs are in much repute for therapeutic purposes, few of them coming under the class of mineral springs. Those which are of value are efficaceous mainly as baths, on account of the amount of sulphuretted hydrogen with which they are impregnated; and none of the springs here described contain this gas in large amount. Most of the above hot springs, however, are held in considerable repute by the natives in the neighbourhood as potent remedies, especially for itch, ulcers and other skin affections. But a most essential part of the process of cure consists in the preliminary worship which must be paid to the presiding deity of the spring.

Nearly all of these springs, as may be seen from column 14 of Table I, are worshipped by the Hindu and semi-aboriginal villagers in the vicinity; for these strange outbursts of heated water, boiling up cauldron-like and wreathed in clouds of vapour are regarded by them as supernatural phenomena, and the especial expression of the presence of a deity. The deity usually worshipped at the springs by the semi-aborigines is Mátá or Mái, the 'mother' goddess—one of the forms of Káli—and large melas are held in her honour. She is especially worshipped by those suffering from itch and other skin diseases; also by the barren, both male and female, who all bathe in the water and drink some of it. Goats &c. are sacrificed to her, and the rocks are daubed with vermillion or red-lead and pieces of coloured rags are tied to the nearest bush or tree in her worship. At Tât-lŏi the mela is held in January and is attended by over 100,000 persons. At Nun-bîl the goddess is called *Nun-bîl devi* and she is believed to especially reside in a large sál tree over the spring; her mela is held in December and also is attended by about a lakh (100,000) of persons. The melas at the other springs are less numerously attended. At Jhariya, the Bhuinya ghátwáls (of Dravidian type, with short frizzly hair) worship with fowl sacrifice and offerings of rice, the spirit of Son-mon Pánḍe, a bráhman priest who is said to have died there. The more Hinduized worshippers, however, believe that their favourite god Mahadeva is specially present at all those hot springs, and to him they there offer worship, except at Síta-kund where worship of Rám and Síta is performed.

Curiously enough, the thermal springs of relatively low temperature, which might perhaps be termed '*warm*' rather than *hot* springs, are believed by the villagers to be hotter in the very early morning and to become cooler as the day advances—this opinion is evidently founded on the loose subjective sensation of the villagers, who in the cool of the morning remark that the spring, being hotter than the atmosphere,

gives a sensation of decided heat; which contrast becomes less marked during the day when the sun has heated up the earth and air, causing these to approach the temperature of the spring.

The temperature of some of the springs, however, does seem occasionally to undergo actual fluctuation according to season and other conditions not yet well ascertained. This indeed might to a certain extent be expected, seeing that hot springs derive their heat more or less directly from volcanic action—which is essentially subject to alternate periods of activity and relative rest. A notable instance of this fluctuation is cited by Dr. Buchanan in his report on the Síta-kund "spring. He writes: "I visited this spring first on the 7th April, a "little after sunrise. The thermometer in the open air stood at 68° F. "and in the hottest part of the reservoir where many air-bubbles rose, "it stood at 130°. The priests said, that about eight days before it had "become cooler, and that the heat would gradually diminish till the "commencement of the rainy season. I visited the spring again on the "20th of April at sunset, the air having been hot all day and parching; "the thermometer in the air stood at 84°, in the well it rose to 122°. "On the 28th April I visited it again a little after sunset, the wind "blowing strong from the east, but not parching. The temperature in "the air was at 90°; in the well it only rose to 92°. The water still "continued clear; but soon after, owing to the reduction of the heat, "and the natives being in consequence able to bathe in the well, the "water became so dirty as to be no longer drinkable by an European. "Indisposition for some time prevented me from being able to revisit "the place; but in the beginning of July, on the commencement of the "rainy season the water, in consequence of the return of the heat, "became again limpid; and on the 26th of that month a native sent "with the thermometer found at sunset that it stood in the air at "90°, and in the water at 132°. In the evening of the 21st September, "the thermometer stood in the air at 88°, in the cistern at 138°, and the "number of air bubbles had very evidently increased."* That record was made about eighty years ago. I find on enquiry from the priests at Síta-kund that the water still becomes slightly cooler in early summer, but since forty years ago it has never become so cool as to permit of bathing, and they endeavour to make a miracle of this by saying that the annual cooling of the pool ceased immediately after the visit of a certain Maharatta rájá. In January of this year I found the highest temperature to be 137° F., and two months later at the same site the temperature registered 136°. When Sir Joseph Hooker visited the place on April

* *Loc. cit.*, p. 197.

1st, 1848, he found the temperature to be only 104° F.* These remarkable fluctuations in the temperature of Sita-kund are well deserving of further inquiry, and Sita-kund is so accessible to residents at Mungir that frequent thermometric observations could readily be carried out there. Several irregular observations by Mr. Masters on the hot springs of the Námba forest in Assam† also indicated considerable fluctuations in the temperature of those springs at different seasons.

The springs above described, together with some others already published, form two well-marked chains running parallel to one another in a direction from S. W. to N. E.—the one series being found along the southern flank of the Santal Pargana Hills, and the other about 95 miles further north, in the Kharagpur Hills and chiefly along their southern flank. It is interesting to find historic testimony to the former existence in this latter region of an active volcano: the Chinese pilgrim, Hiuen Tsiang who visited the neighbourhood of Mungir about "the year 634 A. D. records‡ that "by the side of the capital and bor-"dering on the Ganges river is the I-lan-no mountain, from which is "belched forth masses of smoke and vapour which obscure the light of "the sun and moon."

XIII.—*Natural History Notes from H. M.'s Indian Marine Survey Steamer* "Investigator," *Commander* R. F. Hoskyn, R. N., *Commanding—No.* 16. *The non-indigenous species of the Andaman Flora.—By* D. Prain.

[Received 28th February 1890; Read 2nd April 1890.]

The non-indigenous element in a flora—the weeds of cultivation and the cultivated plants—species introduced, involuntarily or intentionally, by man—is not often dealt with apart, since weeds are rarely in themselves interesting, and because a local treatment is hardly satisfactory where cultivated forms are concerned. But the intrusion of this element is a subject of peculiar interest, particularly when it is possible to review it historically, and as opportunities for doing this are rare, it is well to make use of all that occur.

The Indian convict settlement of Port Blair in the Andaman islands affords such an opportunity. This settlement was commenced

* *Himalayan Journals*, I, p. 89.

† Reported by Dr. Prain in the Society's *Proceedings* for 1887, p. 201.

‡ *Si-yu-ki*, translation from the Chinese of Hiuen Tsiang by S. Beal, II, p. 187.

in its present form in 1858, but it occupies the site of a settlement that existed for a few years in the end of the 18th century, so that some common weeds may possibly have been already introduced and established when the present colony was founded. This prevents us from going back without question to the year 1858 as a starting-point in our enquiry; but, while we are unable to do this, we have nevertheless a quite satisfactory date of commencement in the year 1866, for in that year the late Mr. S. Kurz* paid a botanical visit to the Andamans the results of which are enbodied in a *Report on the Vegetation of the Andaman Islands.*† As an *Appendix* to this report (pp. 29—59) an *Enumeration of the Plants on the Andaman Islands* is given; in this enumeration and in a tabular *Recapitulation* (pp. 22, 23) Mr. Kurz has distinguished the non-indigenous element and dealt separately with its items. The treatment cannot be better explained than it is by Mr. Kurz himself in the following passage taken from his Report (p. 24):—

"A considerable number of plants on the Andamans are only introduced, though some of these species in the surrounding countries "are without any hesitation enumerated in their floras as indigenous. "I noted not less than 76 of these introduced species, while in Singapore the numbers are only 31. This great difference, however, is "scarcely a real one, as we can be certain that most plants at the latter "place are introduced only when they are known to be non-Indian "forms.

"The introduced herbaceous plants on the Andamans are 74 in "number; thus being in proportion to the woody plants as 37: 1. Of "these, seven only are American; which are, therefore, surpassed in "number by nine times the introduced species from the old Continent. "As regards dissemination, the American species supersede the old "Asiatic forms (except grasses), however, in number of individuals.

"An enquiry into the causes of the different modes of immigration "of the non-indigenous plants on the Andamans would show that the "whole number has been introduced by the agency of man, direct and "indirect—a fact which also proves how little chance there is for exotic "plants to cross the sea. I am inclined also to believe that introduction "by means of winds, birds, &c., is applicable only to continents and "adjacent islands, but not to isolated groups of islands. The Andamans "will become an instructive spot for inquiries into the change of a flora

* Wilhelm Sulpiz Kurz, native of Augsburg, Curator of the Herbarium of the Royal Botanic Garden, Calcutta, from 1863 till his death in 1878.

† Calcutta; Office of Superintendent of Government Printing, Ed. 2, 1870: [the first issue, a purely official document of which the edition quoted is a reprint, was circulated by the Government of India in 1867.]

"by introductions. As I directed my full attention to herbaceous "plants, I hope that I have noted nearly all the plants growing at my "visit in the cleared lands."

During a brief visit to the Andamans, in November 1889, the writer made as complete a collection as the time at his disposal would permit of the naturalised species in the settlement at Port Blair, in order to ascertain the number and nature of the species introduced between 1866 and 1889. And Dr. King, who paid a short visit to the settlement in April 1890, very kindly collected such weeds as were flowering then, but had not been seen in the previous November. The results of the visits are given below, the plants collected first by Dr. King being indicated by a (K); the following method has been adopted in presenting them:—

1. Cultivated species and weeds—enumerated together by Mr. Kurz—are here dealt with separately.

2. Species (of both kinds) present in 1866 are taken from the *Enumeration* by Mr. Kurz referred to above; for convenience of reference the synonymy of the *Report* has been made to conform with the nomenclature in the *Flora of British India*.*

3. Additional species (of both kinds) are those first met with by the writer in 1889, or by Dr. King in 1890.

It ought to be noted that the list of cultivated species for 1866, as the remarks of Mr. Kurz shew, is not exhaustive. This is equally true of the corresponding list for 1890. It has been felt that an exhaustive list of exotic species could serve no useful purpose; it is sufficient if attention be directed to such plants, introduced since 1866, as may be reasonably supposed to be capable of becoming in the course of time spontaneous or subspontaneous, and to such plants as possess a direct economic interest. The remarks attributed to Mr. Kurz are in every case taken *verbatim* from his report; where necessary the condition of the species in 1889-90 is commented on; when no second remark occurs the condition of the species is to be understood as having remained apparently unchanged during the period between 1866 and 1890.

* This it has been possible to do with certainty since the original specimens on which Mr. Kurz' *Report* is based are preserved in the Calcutta Herbarium and have in every case been re-examined by the writer.

A. Species under cultivation, obviously planted or intentionally introduced.

I. *Species under cultivation or obviously planted in* 1866.

	Name of Species.	Remarks.	
		Condition in 1866 (*Kurz*).	Condition in 1889-90.
	Michelia Champaca *Linn.*	'Cultivated in gardens at Port Blair.'	
	Cananga odorata *H. F. & T.*	'Cultivated only in the gardens.'	
	Anona squamosa *Linn.*	'Cultivated only in gardens.'	
	*Brassica oleracea *Linn.*	'Many varieties of this plant are cultivated, but do not grow well owing to the great moisture of the atmosphere.'	
5	*B. campestris *Linn.*	'As the former.'	
	*Raphanus sativus *Linn.*	'Cultivated only.'	
	Bixa Orellana *Linn.*	'Cultivated only.'	Cultivated and appearing spontaneously in waste places.
	Hibiscus rosa sinensis *Linn.*	'Cultivated only.'	
	Gossypium barbadense *Linn.* VAR. acuminatum.	'Cultivated only.'	Cultivated and (as on Mt. Harriet) appearing spontaneously in waste places.
10	Impatiens Balsamina *Linn.*	'Cultivated in gardens, and sometimes spontaneously.'	
	Citrus medica *Linn.*	'Cultivated in the gardens of Europeans.'	
	C. decumana *Linn.*	[Cultivated in the gardens of Europeans].	
	Mangifera indica *Linn.*	'Cultivated.'	Not very successfully.
	Moringa pterygosperma *Gaertn.*	'A couple of trees observed on Viper island evidently planted.'	Very common everywhere throughout the Settlement.
15	*Lupinus, sp.	'Cultivated in gardens.'	Not seen in 1889 or 1890.
	Sesbania grandiflora *Pers.*	'Cultivated at Hopetown, Ross Island, etc.'	
	*Cicer arietinum *Linn.*	'Cultivated only.'	
	*Pisum sativum *Linn.*	'Cultivated only.'	
	Clitoria Ternatea *Linn.*	'Cultivated and sometimes as wild.'	
20	Canavalia ensiformis *DC.*	'Cultivated only.'	Mr. Kurz refers to the form distinguished as *C. gladiata* by M. DeCandolle. The wild form of the plant is indigenous.

	Name of Species.	Remarks.	
		Condition in 1866 (*Kurz*).	Condition in 1889-90.
	Phaseolus, several species.	'Cultivated only in gardens.'	*P. lunatus*, *P. vulgaris* and *P. Mungo*.
	Vigna Catjang *Endl.*	'Much cultivated by native convicts.'	
25	Pachyrhizus angulatus *Rich.*	'Cultivated.'	
	Dolichos Lablab *Linn.*	'Cultivated only.'	
	Cajanus indicus *Spreng.*	'Cultivated and sometimes wild.'	In many places subspontaneous or spontaneous.
	Caesalpinia pulcherrima *Sw.*	'Only cultivated.'	
	Cassia Fistula *Linn.*	'Cultivated in gardens at Ross Island.'	
30	Acacia Farnesiana *Willd.*	'Much cultivated on Ross Island.'	
	Leucæna glauca *Benth.*	'Cultivated on Ross Island.'	
	*Rosa, several species.	'Cultivated in gardens.'	
	*Quisqualis indica *Linn.*	'In gardens of Europeans, cultivated.'	
	Psidium Guyava *Linn.*	'Cultivated only.'	A good deal planted on Mt. Harriet.
35	*Cuphea, sp.	'Observed occasionally in the gardens of Europeans.'	Not seen in 1889.
	Lawsonia alba *Lamk.*	'Only cultivated.'	Used as a hedge at Aberdeen.
	Punica Granatum *Linn.*	'Cultivated only.'	
	*Passiflora laurifolia *Linn.*	'Cultivated in gardens of Europeans.'	
	Carica Papaya *Linn.*	'Cultivated and spontaneously springing up around Port Blair.'	Now very common along the sides of jungle paths and spreading along the coast within the line of shore vegetation.
40	Trichosanthes cucumerina *Linn.*	'Cultivated.'	Commonly spontaneous.
	T. anguina *Linn.*	'Cultivated.'	Only in cultivation.
	Lagenaria vulgaris *Ser.*	'Cultivated.'	
	Luffa aegyptiaca *Mill.*	'Cultivated.'	Cultivated and also as an escape.
	Benincasia cerifera *Savi.*	'Cultivated.'	
45	Momordica Charantia *Linn.*	'Cultivated.'	
	M. dioica *Roxb.*	'Cultivated.'	
	Cucumis Melo *Linn.*	'Cultivated.'	
	C. sativus *Linn.*	'Cultivated.'	
	Citrullus vulgaris, *Schrad.*	'Cultivated.'	

	Names of Species.	Remarks.	
		Condition in 1866 (*Kurz.*)	Condition in 1889-90.
50	Cucurbita maxima *Duchesne.*	'Cultivated.'	
	*Opuntia	'In the gardens of Europeans.'	
	*Cereus		
	*Melocactus		
	*Epiphyllum		
55	*Echinocactus (Several species.)		
	*Carum Roxburghianum *Benth.*	'Cultivated.'	
	*Peucedanum graveolens *Benth.*	'Cultivated.'	
	*Coriandrum sativum *Linn.*	'Cultivated.'	
	*Cuminum Cyminum *Linn.*	'Cultivated.'	
60	*Rondeletia speciosa *Lodd.*	'Cultivated in gardens.'	
	*Pentas carnea *Benth.*	'Cultivated in gardens.'	
	Zinnia, several species.	'Cultivated in gardens.'	Frequently subspontaneous.
	*Rudbeckia, species.	'Cultivated in gardens.'	
	*Coreopsis, several species.	[Cultivated in gardens.]	
65	Tagetes, several species.	[Cultivated in gardens.]	Also in waste places near the houses of 'self-supporter' convict colonists, common.
	Plumbago rosea *Linn.*	'Cultivated in gardens.'	
	Jasminum, several sp.	'Cultivated in the gardens of Europeans.'	
	Allamanda cathartica *Linn.*	'Cultivated in gardens.'	
	Thevetia neriifolia *Juss.*	'Cultivated in gardens.'	
70	Vinca rosea *Linn.*	'Cultivated and sometimes as wild.'	Very common in waste places on Ross Island, and about Aberdeen.
	Plumeria acutifolia *Poir.*	'Cultivated only.'	A very favourite shrub in all the European gardens.
	Nerium odorum *Sol.*	'Cultivated only.'	
	*Heliotropium peruvianum *Linn.*	'Cultivated only.'	
	Ipomœa Bona-nox *Linn.*	'Cultivated only in gardens of Europeans.'	
75	I. Quamoclit *Linn.*	'Cultivated in gardens, and now occurring as wild on Ross Island.'	
	I. Batatas *Lamk.*	'Cultivated only.'	The Sweet-potato is rather largely cultivated in the Settlement.
	Lycopersicum esculentum *Mill.*	'Much cultivated by native convicts.'	

	Name of Species.	Remarks.	
		Condition in 1866 (*Kurz*).	Condition in 1889-90.
	Solanum Melongena *Linn.*	'Much cultivated in native gardens and occasionally as wild.'	Often in waste places along with *S. indicum* and *S. ferox*; less often with *S. torvum*.
80	Capsicum, several species.	'In cultivation by native convicts.'	Both the Chillee (*C. frutescens*) and the Bird's-eye Chillee (*C. minimum*) are much cultivated and the latter—the one with small elongated erect berries—is now a frequent weed in waste places. The Big Chillee (*C. grossum*) with large round red berries is very little grown.
	Datura, species.	'Cultivated in gardens.'	There was no *Datura* in cultivation, so far as I could see, but *D. fastuosa* Linn. is now a common weed on rubbish-heaps and in waste places.
	Nicotiana Tabacum *Linn.*	'Cultivated on Mt. Harriet, etc.'	Systematically cultivated as one of the industries of the Settlement.
	*Petunia violacea *Linn.*	'Cultivated in gardens.'	
85	*Russelia juncea *Zucc.*	'Cultivated in gardens.'	
	Justicia Gendarussa *Linn. f.*	'Cultivated in gardens.'	
	Graptophyllum hortense *Nees.*	'As the former.'	
	Lantana camara *Linn.*	'About Aberdeen, amongst the shrubberies as wild but rare.'	Common at Aberdeen and also on Ross Island where it is planted and trimmed *into a hedge!*
	Stachytarpheta indica *Vahl.*	'Cultivated in gardens, at present covering all the sides of Ross Island and around Aberdeen.'	Now also in many places on the opposite side of the harbour, as at Hopetown, Mitakari, etc., but never in gardens, either native or European.
90	*Verbena Aubletia *Linn.* and other species.	'Cultivated in gardens.'	
	Duranta Plumieri *Jacq.*	'Cultivated in gardens.'	
	Vitex trifolia *Linn.*	'Only cultivated in gardens.'	Cultivated, but much more often quite spontaneous.
	Ocimum sanctum *Linn.*	'Cultivated lands at Ross Island, introduced.'	Also in gardens, both of Europeans and natives, though very frequent in waste places all over the Settlement.

	Names of Species.	Remarks.	
		Condition in 1866 (*Kurz*).	Condition in 1889-90.
	*Salvia coccinea *Linn.* and other species.	'Cultivated in gardens of Europeans.'	
95	Plantago major *Linn.*	'Cultivated in native gardens.'	Not seen in 1889 or 1890.
	Mirabilis Jalapa *Linn.*	'Only cultivated in gardens.'	Now not infrequently spontaneous.
	Celosia cristata *Linn.*	'Cultivated in gardens.'	
	Amarantus, several species.	'Cultivated in native gardens.'	*A. paniculatus* and *A. caudatus*.
	Gomphrena globosa *Linn.*	'Cultivated and sometimes as wild.'	
100	Piper Betle *Linn.*	'Cultivated by convicts.'	
	*Euphorbia pulcherrima *Willd.*	'In gardens, cultivated.'	
	Jatropha multifida *Linn.*	'Cultivated only.'	
	Jatropha purgans *Linn.*	'Cultivated only.'	
	Ricinus communis *Linn.*	'Cultivated only.'	Cultivated but also spontaneous on all rubbish heaps and in every waste place and by roadsides.
105	Cannabis sativa *Linn.*	'Cultivated only.'	
	Artocarpus integrifolia *Linn.*	'Cultivated only.'	
	Casuarina equisetifolia *Forst.*	'At Ross Island, cultivated.'	Also now extensively planted on Mt. Harriet and many seedlings appearing. This species is, however, *indigenous* in the Andamans; Col. Cadell, V. C., Chief Commissioner, tells me it is plentiful at Casuarina Bay on the west side of N. Andaman.
	Curcuma, several species.	'Cultivated.'	
	Canna indica *Linn.*	'Cultivated in gardens and sometimes wild in jungles, where it has been sown.'	
110	Musa sapientum *Linn.*	'Cultivated everywhere.'	
	Ananas sativa *Adans.*	'Now everywhere cultivated and producing fruit of good quality.'	
	*Belamcanda sinensis *Adans.*	'In gardens; cultivated.'	
	*Zephyranthes, species.	'Cultivated in gardens.'	
	*Hippeastrum, species.	[Cultivated in gardens'].	

Names of Species.	Remarks.	
	Condition in 1866 (*Kurz*).	Condition in 1889-90.
*Allium sativum *Linn.*	'Cultivated in gardens.'	
*A. Cepa *Linn.*	[Cultivated in gardens].	
Areca Catechu *Linn.*	'Cultivated, especially at Aberdeen.'	Extensively cultivated.
Cocos nucifera *Linn.*	'Only on the Cocos islands indigenous. Now everywhere cultivated and sown along the shores.'	Very extensively planted throughout the Settlement, many thousands of trees of excellent quality having been planted in the ground reclaimed from mangrove swamps. The quality of the cocoa-nut produced by the trees on Great Coco Island is comparatively poor. The question of distribution of this species is hoped to be discussed in a future note.
Panicum jumentorum *Pers.*	'Cultivated at Ross Island and Aberdeen.'	
Coix Lachryma *Linn.*	'Cultivated in gardens.'	Now in ditches as if wild at Aberdeen and Haddo.
Zea Mays *Linn.*	'Cultivated in gardens and sometimes as wild.'	Cultivated largely; not seen anywhere as if spontaneous.
Oryzas ativa *Linn.*	'Only in small quantities; cultivated.'	Now a staple crop; along with maize in new forest clearings, then rather unsuccessfully, *especially during the first season*, on account of an insect-pest; also very largely cultivated in the reclaimed mangrove-swamp land, there producing heavy crops of excellent quality.
Saccharum officinarum *Linn.*	'Cultivated by convicts.'	
Cynodon Dactylon *Pers.*	'The favourite grass here; everywhere sown and now occurring wild on the cleared lands.'	Very common everywhere, and still the favourite grass.

II. *Species cultivated or planted, or obviously introduced, seen in* 1889 *and* 1890 *not present in* 1866.

Names of Species.	Remarks.
Anona reticulata *Linn.*	Cultivated.
125 Garcinia Mangostana *Linn.*	Cultivated and doing well.
Camellia theifera *Griff.*	Systematically cultivated as one of the industries of the Settlement; the tea produced is of excellent quality.
Hibiscus esculentus *Linn.*	Cultivated in gardens.
H. Sabdariffa *Linn.*	Cultivated by convicts.
Durio Zibethinus *DC.*	Cultivated.
130 Swietenia Mahogani *Linn.*	Planted.
S. macrophylla *King.*	Planted and thriving well, does much better than the true mahogany.
*Nephelium Litchi *Camb.*	Cultivated but with poor results.
Phaseolus trilobus *Ait.*	Cultivated by convicts, but also very common in waste places as a weed.
Bauhinia acuminata, *Linn.*	Cultivated, but also appearing spontaneously. (K.)
135 Poinciana regia *Boj.*	Planted.
Brownea, several varieties.	Planted.
Amherstia nobilis *Wall.*	Planted and thrives very well.
Tamarindus indica *Linn.*	Planted.
Saraca indica *Linn.*	Planted.
140 Pithecolobium dulce *Benth.*	Planted as a shade-tree and also trimmed as a hedge; many seedlings appearing spontaneously.
P. Saman *Benth.*	Planted very generally; does well on roadsides and on ground too indiscriminately cleared—which few native species will.*

* *Pithecolobium Saman*, the Rain-tree, a native of the West Indies, Central America, Venezuela and Guiana, though yielding a timber useless except as firewood is nevertheless a valuable tree. It is a fast-growing and easily-raised species and, if planted along with more valuable kinds, forms an effective nurse for these during the earlier years of their growth. It also yields a valuable crop of sweet pulpy pods greedily eaten by cattle. It is said, moreover, to improve the quality of land encrusted with *reh* inflorescence. The following girth measurements of 13 trees in the Botanic Garden, Calcutta, will give some idea of the rate at which the species grows. The measurements in every case are taken at 60 inches from the surface of the soil—the trees measured were not selected (except No. 13 which was added as being the largest in the whole line) but were contiguous trees in the road known as the *College avenue*. The trees all date from 1876; the measurements were made in January 1890.

	ft.	in.		ft.	in.
No. 1.	5	5½	No 8.	5	1
„ 2.	6	4	„ 9.	5	4
„ 3.	6	4	„ 10.	6	7
„ 4.	5	7	„ 11.	7	3
„ 5.	7	5	„ 12.	5	11½
„ 6.	7	6	„ 13.	8	3
„ 7.	6	10½			
			average girth	6	5½

	Names of Species.	Remarks.
	Melaleuca Leucadendron *Linn.*	Planted.
	Eugenia Jambos *Linn.*	Cultivated.
	*Daucus Carota *Linn.*	Cultivated.
145	Ixora coccinea *Linn.*	Very common in gardens of Europeans.
	*Coffea arabica *Linn.*	Cultivated.
	Carissa Carandas *Linn.*	Cultivated, not very successfully.
	Ipomœa coccinea *Linn.*	In gardens, but also a frequent escape.
	Solanum tuberosum *Linn.*	The potato does very poorly.
150	Physalis peruviana *Linn.*	Cultivated.
	Torenia, sp.	Cultivated, but also often appearing spontaneously.
	Thunbergia alata *Boj.*	Cultivated, but also appearing as an escape, *e. g.*, at Namuna ghat. (K.)
	T. erecta *T. And.*	Planted as a hedge on Mt. Harriet.
	Dædalacanthus salaccensis *T. And.*	Frequent in gardens.
155	Tectona grandis *Linn. f.*	The teak-plantations under the care of the Forest Department are doing exceedingly well.*
	Bougainvillea glabra *Choisy.*	In gardens of Europeans.
	Deeringia celosioides *Br.*	In gardens, but also appearing subspontaneously.
	Cinnamomum zeylanicum, *Breyn.*	Cultivated and doing very well. (K.).
	Euphorbia antiquorum *Linn.*	Grown as a hedge-plant.
160	Ficus bengalensis *Linn.*	Planted.
	F. Rumphii *Blume.*	Largely planted on roadsides at Aberdeen under the impression that it was the Pípal (*F. religiosa*).
	F. religiosa *Linn.*	A few trees only.
	Ravenala madagascariensis *Adans.*	Planted.
	Agave vivipara *Linn.*	Very common in gardens of Europeans.
165	Dioscorea sativa *Linn.*	Cultivated.
	Colocasia antiquorum *Schott.*	Cultivated but also appearing spontaneously in marshy spots around Aberdeen.
	Bambusa Brandisii *Munro.*	These Bamboos have been planted somewhat extensively throughout the Settlement.
	Dendrocalamus strictus *Nees.*	
169	Cephalostachyum pergracile *Munro.*	

These intentionally introduced species belong to three distinct classes :—

1. *Such as probably never could become naturalized*—truly exotic species, such as temperate vegetables and garden flowers and plants

The name Rain-tree is derived from a phenomenon of condensation or exudation (both explanations have been offered) *said to be exhibited by the tree in America* ; in India nothing of the sort occurs.

* It should be noted also that the Forest Department is actively engaged in propagating *Padouk*, a very valuable indigenous timber tree (*Pterocarpus indicus* Willd.) and that the Andamanese *Pyenmah*, another good timber tree (*Lagerstræmia hypoleuca* Kurz) is extensively planted.

that affect a drier climate than that of the Andamans; such species have been distinguished by an (*):—

2. *Such as might be expected to hold their own in the struggle for existence* should the Settlement happen to be abandoned—a class the precise limits of which cannot be laid down with certainty; this is the class not marked (*) and at the same time not noted as occurring spontaneously; it is moreover from this that the next class is recruited;

3. *Such as are naturalized in the Andamans now*—the species for which there was evidence either in 1866 or 1890 that spontaneous appearance has actually commenced.

The two former classes do not require further consideration; taken in detail we find that of the last class 14 species were naturalized prior to 1866. These were:—

Impatiens Balsamina.	*Lantana camara.*
Clitoria Ternatea.	*Stachytarpheta indica.*
Cajanus indicus.	*Ocimum sanctum.*
Carica Papaya.	*Gomphrena globosa.*
Vinca rosea.	*Canna indica.*
Ipomœa Quamoclit.	*Cocos nucifera.*
Solanum Melongena.	*Cynodon Dactylon.*

Before 1889 14 other species, that had been introduced prior to 1866 but had not at that date become naturalised, had begun to appear spontaneously. These were:—

Bixa Orellana.	*Capsicum minimum.*
Gossypium barbadense.	*Datura fastuosa.*
Moringa pterygosperma.	*Vitex trifolia.*
Trichosanthes cucumerina.	*Mirabilis Jalapa.*
Luffa ægyptiaca.	*Ricinus communis.*
Zinnia elegans.	*Casuaria equisetifolia.*
Tagetes, sp.	*Coix Lachryma.*

At the same time 9 other species not present in the Andamans at all in 1866 were nevertheless appearing spontaneously in 1890. These were:—

Phaseolus trilobus.	*Ipomœa coccinea.*
Bauhinia acuminata.	*Torenia*, sp.
Pithecolobium dulce.	*Thunbergia alata.*
P. Saman.	*Deeringia celosiodes.*

Colocasia antiquorum.

So that in 1890 there were in the Andamans no fewer than 37 species occurring spontaneously that had originally been intentionally introduced, as against 14 species of this kind in 1866.

It is necessary to note further that one species, *Zea Mays*, which

Mr. Kurz found occurring spontaneously in 1866, was only seen cultivated in 1889 and 1890.

B. Weeds or unintentionally introduced species.

III. *Species unintentionally introduced prior to* 1866.

Name of Species.	Remarks.	
	Condition in 1866 (*Kurz*).	Condition in 1889-90.
Cleome viscosa *Linn.*	'Cultivated lands, Ross Island, introduced and rare.'	Still rare.
Saponaria Vaccaria *Linn.*	'Cultivated lands near Aberdeen, introduced and rare.'	Not seen in 1889 or 1890.
Portulaca oleracea *Linn.*	'Cleared lands around Aberdeen, Haddo, on Ross Island, etc., introduced.'	Observed at Rangachang also, which is almost the extreme limit of the Settlement.
Portulaca quadrifida *Linn.*	'Cleared lands around Port Blair, introduced.'	Much more unusual than the preceding.
Sidacarpinifola *Linn.*	'Cleared lands, Aberdeen, Ross Island, etc., introduced.'	Very common all over the Settlement.
Oxalis corniculata *Linn.*	'Cultivated lands around Port Blair, introduced and rare.	Still exceedingly uncommon; not seen on Ross Island.
Cardiospermum Halicacabum *Linn.*	'Cleared lands around Aberdeen, common but introduced.'	
Desmodium triflorum *DC.*	'Common in cleared lands around Port Blair, introduced.'	Very common on the drier grassy slopes all over the Settlement.
Cassia alata *Linn.*	'Hopetown, as wild, but evidently introduced.'	Very common near Hopetown, not seen elsewhere.
Mimosa pudica *Linn.*	'Cleared lands around Aberdeen and Phoenix Bay, rare, introduced.'	Very common throughout the whole extent of the Settlement.
Bryophyllum calycinum *Salisb.*	'On Ross Island, in cultivated lands, rare, and evidently introduced.'	Not seen in 1889 or 1890.
Ludwigia prostrata *Roxb.*	'From Aberdeen to Haddo on wet places, appears to be introduced with rice.' The *L. parviflora* of Mr. Kurz's list. Both sp. are now common but Mr. Kurz only gathered this one.	Common in the rice fields reclaimed from mangrove swamps all over the Settlement.
Mukia scabrella *Arn.*	'Aberdeen, cultivated lands, rare, introduced.'	Not uncommon about the Settlement.
Dentella repens *Forst.*	'Cultivated lands on Ross Island, around Aberdeen, etc., introduced.	

	Name of Species.	Remarks.	
		Condition in 1866 (*Kurz.*)	Condition in 1889-90.
15	Oldenlandia corymbosa *Linn.*	'Cultivated lands around Port Blair, introduced.'	A very common species.
	Vernonia cinerea *Less.*	'Common all over the cleared lands but only introduced.'	
	Elephantopus scaber *Linn.*	'Ross island in cultivated lands, rare, introduced.'	Not seen in 1889 or 1890.
	Ageratum conyzoides *Linn.*	'Common on cleared ground, rapidly penetrating into the jungles whenever a little cleared, introduced.'	
	Blumea amplectens *DC.*	'Phœnix Bay, cleared lands, introduced.'	Common everywhere, but possibly indigenous.
20	Eclipta alba *Hassk.*	'Common on cultivated or cleared lands around Port Blair, introduced.'	
	Synedrella nodiflora *Gaertn.*	'Common on cleared lands around Hopetown and Aberdeen, introduced.' (*Blainvillea latifolia* Kurz, non DC.); 'cultivated lands, Ross Island, rare, introduced'; (*Spilanthes oleracea* Kurz, non Linn.).	Extremely common everywhere and in two strikingly distinct conditions; one, the genuine plant, and another, larger in habit and ranker of growth but smoother in all its parts, strikingly like *Blainvillea latifolia* at first sight.
	Centipeda orbicularis *Lour.*	'Cultivated lands on Ross Island, around Aberdeen, etc., introduced.'	
	Heliotropium indicum *Linn.*	'Cultivated lands around Aberdeen, rare and introduced.'	Not very common.
	Cynoglossum micranthum *Desf.*	'Between Aberdeen and Phœnix Bay, I suspect introduced only, as I saw it nowhere else.'	Not seen in November, 1889 found in April, 1890.
25	Solanum nigrum *Linn.*	'Cultivated lands around Aberdeen, rare, introtroduced.'	Very common.
	Solanum torvum *Sw.*	'Around Aberdeen, etc.; introduced.'	Very common.
	Solanum xanthocarpum *Schrad.*	'Cleared lands around Phœnix Bay and Aberdeen; introduced.'	Not at all common.
	Angelonia salicariaefolia *H. B. & K.*	'Common in cultivated lands on Ross Island; introduced.'	Not common.
	Mazus rugosus *Lour.*	'Cultivated lands around Aberdeen; introduced.'	
30	Vandellia crustacea *Benth.*	'In cultivated lands around Port Blair; introduced.'	
	Bonnaya veronicæfolia *Benth.*	'Cultivated lands around Aberdeen; introduced.'	

	Names of Species.	Remarks.	
		Condition in 1866 (*Kurz.*	Condition in 1889-90.
	Scoparia dulcis *Linn.*	'Common all over the cleared lands around Port Blair and penetrating into the jungles; introduced.'	
	Rungia parviflora *Nees* var. pectinata *Clarke.*	'Andamans.'	On Ross Island, and evidently introduced, not common.
	Lippia nodiflora *Rich.*	'Cleared lands all around Port Blair, and becoming very fleshy along the sea shores; introduced.'	
35	Leucas linifolia *Spreng.*	'Cultivated lands, on Chatham Island; introduced and still rare.'	Not yet on the mainland or on Ross Island apparently.
	Celosia argentea *Linn.*	'Cleared lands around Haddo; rare; introduced.	Still rare.
	Amarantus spinosus *Linn.*	'Cultivated lands around Phœnix Bay; introduced and rare.'	Still rare.
	A. viridis *Linn.*	'Rather common in cleared lands at Aberdeen, Ross Island, Haddo, etc.; introduced.'	Very common.
	Alternanthera sessilis *R. Br.*	'Common in cleared lands along roads, etc., at Port Blair; introduced.'	Common.
40	Polygonum barbatum *Linn.*	'Some shoots of species of this genus I observed in the cultivated lands around Haddo; evidently introduced.'	Common in the ditches about Aberdeen.
	Euphorbia pilulifera *Linn.*	'Cultivated lands around Port Blair; common; introduced.	
	E. thymifolia *Burm.*	'Along roads, in cultivated lands, etc., around Port Blair; introduced.'	
	Cyperus polystachyus *Rottb.*	'Cultivated lands between Aberdeen and Navy Point; introduced.'	
	C. distans *Linn. fil.*	'Ross Island and other stations, in pasture ground; introduced.'	
45	C. compressus *Linn.*	'Cultivated lands here and there around Port Blair; introduced.'	
	C. Iria *Linn.*	'Rather rare, in wet places at Ross Island, etc.; introduced.'	Not now very rare.
	Kyllinga monocephala *Rottb.*	'Cleared lands around Port Blair; introduced.'	Common; both type and var. *subtriceps. K. triceps* of Kurz' list is only this latter variety.

	Names of Species.	Remarks.	
		Condition in 1866 (*Kurz.*)	Condition in 1889-90.
	Fimbristylis diphylla *Vahl.*	'Common all over the cleared lands around Port Blair; introduced.' The *F. miliacea* of Kurz' list is only another state of this species and is not *F. miliacea* of Vahl.	Perhaps indigenous.
	Paspalum filiculmum *Nees.*	'On Ross Island; introduced.'	Common.
50	P. scrobiculatum *Linn.*	'Cultivated lands around Port Blair; introduced.	
	Eriochloa annulata *Nees.*	'On Ross Island; introduced.'	Also about Aberdeen.
	Panicum Colonum *Linn.*	'South Point, Aberdeen, etc., in cultivated lands; introduced.'	
	P. ciliare *Retz.*	'Common in cultivated lands around Port Blair; introduced.'	
	P. sanguinale *Linn.*	'Cultivated lands around Port Blair; introduced.'	
55	Andropogon pseudo-ischæmum *Nees.*	'Cultivated lands and gardens at Ross Island; introduced.'	
	A. contortum *Linn.*	'Only in garden land on Ross Island; introduced.'	Common everywhere.
	Chrysopogon aciculatum *Trin.*	'Common on Chatham Island; introduced.'	Common throughout the Settlement.
	Sporobolus diander *Trin.*	'Common on Chatham Island; introduced.'	Very common throughout the Settlement.
	Eleusine indica *Gaertn.*	'Cultivated lands everywhere around Port Blair; introduced.'	
60	E. aegyptiaca *Pers.*	'Cultivated lands on Ross Island; introduced.'	Common every where around Port Blair.
61	Leptochloa filiformis *R. Br.*	'Along the path from Phœnix Bay to Aberdeen; scarce; introduced.'	

IV. *Species unintentionally introduced between* 1866 *and* 1890.

	Name of Species.	Remarks.
	Sida rhombifolia *Linn.*	Everywhere throughout the Settlement and quite as common as *S. carpinifolia* is.
	Melochia corchorifolia *Linn.*	Occasional.
	Triumfetta rhomboidea *Jacq.*	On Ross Island, and also at Aberdeen, not yet very common.
65	Crotalaria retusa *Linn.*	Not infrequent about Aberdeen, not seen in cultivation.

	Names of Species.	Remarks.
	Smithia sensitiva *Linn.*	Common on dry grassy slopes at Aberdeen.
	Desmodium polycarpon *DC.*	Common at North Bay and on the cleared hill-sides above. Not met with by Mr. Kurz, but, perhaps, it may be indigenous for it also occurs on Great Coco Island and Barren Island.
	D. auricomum *Grah.*	Common along with *Smithia* and with *Desmodium triflorum.* It is rather an interesting addition to the Flora, for though a mere weed this plant has hitherto only been collected in Tenasserim, Martaban and Arracan.
	Alysicarpus vaginalis *DC.*	Common on grassy slopes (K.)
70	Cassia occidentalis *Linn.*	Common (K.).
	C. Tora *Linn.*	Very common everywhere.
	Ammannia baccifera *Linn.*	In wet places, not uncommon.
	Jussiæa suffruticosa *Lamk.*	In wet places, along with the two *Ludwigias* and much more plentiful than either.
	Ludwigia parviflora *Roxb.*	Common in ricefields, but not quite so frequent as *L. prostrata.*
75	Hydrocotyle asiatica *Linn.*	Common on stone walls and roadsides all over Ross Island, but not yet present on the mainland or on the other islands.
	Oldenlandia diffusa *Roxb.*	Aberdeen etc., not very common.
	O. crystallina *Linn.*	The commonest *Oldenlandia* on Ross Island. The commonest both at Aberdeen and on Mt. Harriet is O. *corymbosa.*
	O. paniculata *Linn.*; forma 'minima' = *Hedyotis minima* Burm.	Common on Ross Island and obtained both by the writer in 1889 and by Dr. King in 1890.
	Adenostemma viscosum *Forst.*	Only met with in one place on a rubbish heap Ross Island.
80	Blumea glomerata *DC.*	Common on Ross Island, etc., (K.).
	Wedelia calendulacea *Less.*	Ross Island only (K.)
	Cosmos sulphureus *Cav.*	Very common on hill sides and waste places. This the writer was assured had never been grown as a garden plant. It forms large patches where it occurs, the individual plants being 6 to 10 feet in height.
	Tridax procumbens *Linn.*	Common on Ross, not yet common on the mainland.
	Crepis japonica *Benth.*	Introduced at Aberdeen (K.).
85	Sonchus arvensis *Linn.*	Common in gravel pits on Mt. Harriet.
	Launea nudicaulis *Less.*	Both on Ross and at Aberdeen (K.).
	Ipomœa aquatica *Forsk.*	In ponds at Aberdeen; the mode of introduction of this species is open to question. It may have been introduced by birds, but it may equally well have been introduced as a weed.
	Solanum ferox *Linn.*	Very common all over the settlement on drier hill sides along with *S. torvum.*
	S. indicum *Linn.*	Quite as common as the preceding. [*S. nigrum* and *S. xanthocarpum*, though introduced before 1866, are by no means so frequent.]
90	Physalis minima *Linn.*	Not at all common.
	Striga lutea *Lour.*	Common on dry hill sides at Aberdeen, parasitic on introduced grasses.
	Sesamum indicum *DC.*	Frequent (K.).

	Names of Species.	Remarks.
	Phaylopsis parviflora *Willd.*	Rare, on Ross only (K.).
	Hygrophila quadrivalvis *Nees.*	Common in wet places along with *Jussiæa* and *Ludvigia.*
95	Lippia geminata *H. B. K.*	At Namuna ghat (K), rare.
	Hyptis brevipes *Poit.*	Common (K.).
	Bœrhaavia repens *Linn.*	Not common and not met with by Mr. Kurz; it may, however, be indigenous; it certainly seems to be so on Great Coco Island.
	Aerua lanata *Juss.*	Not very common.
	Achyranthes aspera *Linn.*	Very common in every part of the settlement and penetrating into the jungles.
100	Phyllanthus urinaria *Linn.*	Common on Ross and on Mt. Harriet; not so plentiful at Aberdeen.
	Monochoria vaginalis *Presl.*	In ponds at Aberdeen; perhaps introduced by means of wading-birds.*
	Paspalum distichum *Linn.*	Common on Ross and at Hopetown.
	P. pedicellatum *Nees.*	Common on Ross, not seen elsewhere.
	Panicum erucæforme *Sibth.*	Aberdeen, common.
105	P. excurrens *Trin.*	By edge of pond at Aberdeen.
	P. longipes *W. & A.*	On Mt. Harriet.
	P. myosuroides *R. Br.*	Very common.
	Imperata cylindrica *Kunth.*	Common everywhere.
	Rottbœllia exaltata *Linn.*	Common in marshy ground about Aberdeen and Haddo.

* There is another species that has, however, been excluded from this list, because neither Dr. King in 1890 nor the writer in 1889 met with it, to which the same remark applies. This species is *Barclaya longifolia.* The Andamans is first given as a locality for this species in King: *Materials for a Flora of the Malayan Peninsula*, p. 34. The Andamans specimens were obtained by one of Dr. King's garden collectors in 1884 in a ditch among rice-fields near Haddo. It may be said with something like certainty that the species was not there in 1858; at all events there was no rice-field and no ditch then. And it is almost as certain that it was not present in 1866, for Mr. Kurz, as his *Report* shews, gave particular attention to aquatic vegetation, yet he did not meet with it. Probably the ditch where Dr. King's collector found *Barclaya*, like the pond where the writer found *Monochoria* and *Ceratopteris*, did not exist at all in 1886. Another circumstance that tends to confirm the idea of the introduction being recent is that it does not appear to be present in any of the ditches or ponds examined by the writer in 1889, and Dr. King, to whom this fact was particularly mentioned, and who looked for *Barclaya* with especial care in 1890, was equally unsuccessful in his search. It may, therefore, be safely presumed to be still quite local. For the appearance of *Barclaya*, as for that of *Monochoria*, bird-agency at once suggests itself; introduction by indirect human agency is not, however, precluded in either case. Allowing the mode of introduction to be a point altogether doubtful, there still remains an interesting fact—this species (like *Desmodium auricomum*) is one hitherto only known from the opposite shores of the Andaman Sea. And this fact weakens the evidence from other sources as to introduction; for it is the Burmese, and particularly the *Pegu-Tenasserim* element, that seems to predominate in the *indigenous* Andaman flora.

	Names of Species.	Remarks.
110	Ischæmum rugosum *Nees.*	Aberdeen.
	I. ciliare *Retz.*	Aberdeen, rather common.
	Anthistiria scandens *Roxb.*	Aberdeen, very common.
	Chloris barbata *Sw.*	Ross Island and Aberdeen.
	Eragrostis unioloides *Nees.*	Very common on Ross Island, not seen at Aberdeen.
115 Cryptogams.	Selaginella proniflora *Bak.*	Very plentiful everywhere on Ross, but not present either at Aberdeen, Hopetown or Viper.
	Cheilanthes tenuifolia *Siw.*	On gravelly roadsides at Aberdeen.
	Ceratopteris thalictroides *Brogn.*	In ponds at Aberdeen; possibly introduced by water-birds; (see note on *Monochoria vaginalis.*)

Comparing the state of affairs in 1866 with that prevailing in 1890 we find that at the former date there were present in the Andamans 61 weeds of cultivation of which 58 were again met with, either in November 1889 or in April 1890. But too great weight should not be placed on the absence of any plant, since it is quite possible that in visits of such short duration as those of the writer and Dr. King species that are not very common might easily be overlooked.

In November 1889 and in April 1890, on the other hand, we find that not only were 58, or 95 %, of the weeds of 1866, present, but that 56 others had found their way into the settlement during the interval between 1866 and 1890.

Briefly reviewed the results indicated by these four lists are :—

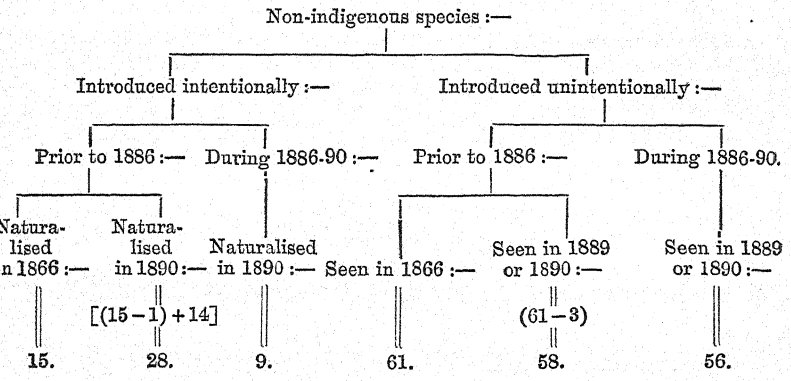
1. That in 1866 15 intentionally introduced plants and 61 weeds of cultivation had apparently or actually become so established in the Andamans that, though not indigenous plants, they had become an integral portion of the Andamans flora.

2. That by 1890 14 more of the plants intentionally introduced prior to, but only seen under cultivation in, 1866 had become similarly naturalised; that along with these 9 species, intentionally introduced during the interval between 1866 and 1890, had begun to appear spontaneously; also, that during the same interval 56 more weeds had been introduced.

3. That, on the other hand, a species appearing spontaneously in 1866 was only seen cultivated in 1890, and that three of the 1866 weeds were not met with in 1889 or 1890.

The subjoined table exhibits the intrusion of the non-indigenous element at present existing in the flora of the Andamans.

TABLE I. *Intrusion of non-indigenous Andamans plants.*



Total for 1866.	15+61	= 76.
Total for period 1866-90.	14+ 9+56	= 79.
Total for 1890.	28+ 9+58+56	= 151.

During his stay in the Andamans in 1866 Mr. Kurz observed 520 indigenous species. But he has pointed out (*Report*, p. 19) that this "is only an approximation to the actual number existing on the is-"lands." Since 1866 the number of indigenous species has been raised to about 600. Mr. Kurz has recorded the number of species found growing on 100 square yards in a suitable locality in the interior on the eastern side of the island and not far from Aberdeen. He shews (*Report*, p. 21) that an estimate based on this record and extended to the rest of the islands of the Andaman group gives scarcely more than 600 or 700 species for the whole. At the same time, he thinks that an estimate of the same kind deduced from the conditions that prevail on the western side of the island would give quite other results, and, taking everything into consideration, he concludes that "the number of really "indigenous phænogamic plants may range between 1500 and 1800 "species." In all probability the second estimate is too high and perhaps a number nearer 1000 will be ultimately found to express the actual total of indigenous phanerogams. But the question need not be discussed here, and if in the meantime absolute records of the appearance of non-indigenous species be supplied, the precise proportion of introduced to indigenous species at various periods in the history of the islands can easily be ascertained when their flora shall have been completely investigated.

But a relative proportion is only less useful than an absolute one would be, and if we take 1000 as a convenient approximation to the actual total we may compare the state of affairs in 1866 with that in 1890. In this case we must confine ourselves to introduced phanerogams only, and exclude the three cryptogams that have been introduced during the interval between 1866 and 1890. The following are the results :—

1866. Proportion of introduced to indigenous species $= \frac{76}{1000}$ or, 1 : 13.

Percentage of introduced species $= \frac{76}{1076}$ or, 7·06%.

1890. Proportion of introduced to indigenous species $= \frac{146}{1000}$ or, 1 : 7.

„ Percentage of introduced species $= \frac{146}{1146}$ or, 12·74%.

The greater number of these introduced plants are herbaceous ; but the proportion of woody species is slowly increasing, as the following figures shew :—

1866. Proportion of woody to herbaceous species $= \frac{2}{74}$ or, 1 : 37.

„ Percentage of woody species $= \frac{2}{76}$ or, 2·63%.

1890. Proportion of woody to herbaceous species $= \frac{7}{139}$ or, 1 : 20.

„ Percentage of woody species $= \frac{7}{146}$ or, 4·79%.

Human agency is responsible for the introduction of the whole of this non-indigenous element in the Flora of the Andamans. That it is directly responsible for the introduction of such species as have been intentionally introduced that have subsequently become spontaneous is self-evident ; that it is equally directly responsible for the unintentionally introduced weeds is hardly less plain. They are with very few exceptions the commonest of Indian road-side and rice-field weeds whose seeds would readily be found mixed with imported grain or attached to the belongings of convict immigrants or of the police sepoys of the Settlement. This mode of introduction explains not only the occurrence of the weeds of dry ground but of the majority of the marsh species, such as *Hygrophila*, *Jussiæa*, *Ludwigia*, as well. And species of the only class for which this explanation is not altogether satisfactory—water-plants like *Monochoria*, *Ceratopteris*, or *Ipomœa aquatica*—nevertheless owe their introduction *indirectly* to human agency,

since but for the existence of the Settlement the ditches and pools in which they occur would not exist. The agency of winds, so often supposed to be highly effective, suggests itself for very few of the species, the most probable being the *Selaginella* and the *Cheilanthes*,—almost the only posssible one among phanerogams being the *Calotropis*. But if these be wind-introduced species then as regards all three the questions at once arise ;—why were they not to be found in 1866 ? and, why are they only to be found within the limits of the Settlement now ? And as regards *Selaginella* a closer enquiry makes the agency of wind highly improbable, for it is as yet only to be found on Ross Island, although there, as it happens, it is exceedingly common. Now Ross Island is the part of the Settlement that is in *immediate* intercourse with Burma and India, and unless it has been imported as a weed one can hardly explain its absence from the rest of the Settlement where the conditions are quite as favourable for its existence as they are on Ross. As regards *Calotropis* too there is a striking fact to record. It happens to be the chief food-plant of a particular species of butterfly—*Danais genutia*—which is dispersed throughout India and Burma. This butterfly was long supposed to be absent from the Andamans, but within the past few years it has been sparingly reported thence.* It thus seems as if till the establishment of its food-plant in the Settlement this butterfly was not known from the Andamans. To what agency the introduction of *Danais genutia* itself is due it is foreign to the purpose of this paper to enquire, but it is a suggestive fact that once the food-plant had become established the butterfly appeared. And the absence of the butterfly while there was no evidence of the presence of the plant seems presumptive evidence that the plant was *not* present till very recently, and that, therefore, human agency is not merely indirectly responsible for its introduction, by providing conditions suitable for the survival of wind-conveyed seeds, but is directly responsible, from the unintentional conveyance of its seeds along with grain or in some other way. For it is long since these suitable conditions have come into existence, and wind-agency, if a factor at all, is in these latitudes a fairly constant one.

Human agency being so completely responsible, one might hope that the channels of introduction of particular species, which must coincide with the routes of traffic between the Settlement and the adjacent mainland, could be easily ascertained. But this is far from being the case. These traffic routes are :—

* This information was offered by Mr. L. de Nicéville in the course of a brief conversation that followed the reading of this paper at the meeting of the Asiatic Society of Bengal in April 1890.

1. Calcutta to Port Blair; implying introduction from Northern India and especially the Gangetic plain.

2. Port Blair to Rangoon; implying introduction from Lower Burma.

3. Port Blair to Madras; implying introduction from Southern India.

4. Moulmein to Port Blair; implying introduction from Tenasserim—a route used by native craft.

5. Port Blair to the Nicobar Islands; implying introduction from these—the Nicobars are a dependency of the Settlement at Port Blair.

The distribution of the majority of these introduced species is so wide that (with the exception of 4 species whose introduction has almost certainly been confined to the Rangoon or the Moulmein route and other 4 almost certainly restricted to the Madras or the Calcutta route) any one of them may have equally well reached the Settlement by any or all of these routes. This is best shewn by a tabular view of the species thus introduced.

TABLE II. *Distributional features of the Non-indigenous element in the Flora of the Andamans.*

Cosmopolitan in the Tropics			62
Indigenous in the Old World			65
In other continents besides Asia		36	
Confined to Asia		29	
Throughout South-Eastern Asia	21		
Confined to India or only extending westward from India	4		
Confined to Burma and Malaya or only extending eastward thence	4		
Indigenous in the New World, but now cosmopolitam or nearly so			19

It may therefore be concluded that there is a practical indifference displayed as regards route; here, as everywhere else, when man is engaged in cultivation he involuntarily introduces weeds, and here as elsewhere a certain proportion of the species introduced by him for economic or for aesthetic reasons escape and become spontaneous.

It has been already said that the present Settlement occupies the site of an earlier one. This earlier settlement was founded under the

name of Port Cornwallis by Lieut. Blair* in 1789, in obedience to orders issued in September of that year. In November 1792 orders were issued for the removal of the Settlement to another and more spacious harbour in North Andaman; to this new settlement the original name Port Cornwallis was again applied. It is nowhere distinctly stated, though, considering the transfer of name from the old settlement to the new, it is highly probable, that *old* Port Cornwallis was entirely abandoned in 1792. We know, however, that in 1796 orders were issued for the removal of the whole establishment to Penang. The doubtful point, so far as our present enquiry is concerned, is the length of time prior to the establishment of the present Settlement that its site was exposed to influences favourable for the active introduction of non-indigenous species. But we know that altogether these influences only existed for six seasons and could only have been active during three seasons; probably they only existed at all during these three seasons. The present Settlement was commenced in March 1858; Mr. Kurz visited it during April-July 1866; to the eight seasons (1858-66) that had passed between the foundation of the Settlement and the date of that visit we must therefore add three more seasons (1789-92) in order to make up the whole period during which the non-indigenous species recorded by Mr. Kurz were being introduced. Even if the original site was not wholly abandoned in 1792 the subsequent seasons (1792-96) may be neglected without producing any appreciable error. Assuming, therefore, that a period of eleven seasons has been responsible for the naturalisation and introduction of the species in the two lists for 1866 we are able to calculate the rates of these processes and to compare them with the rates between 1866 and 1890. These are shewn in the following table:—

TABLE III.—*Rate of Introduction of Non-indigenous Species.*

Non-indigenous species naturalised.	DURING PERIOD I. Prior to 1866 (1789-92 + 1858-66) = 11 seasons.		DURING PERIOD II. Bet. 1866 & 1890, (1866-90) = 24 seasons.	
	No. of species.	Rate per annum.	No. of species.	Rate per annum.
Cultivated plants introduced during Period I	15	1·36	14	0·58
Cultivated plants introduced during Period II ...	...	...	9	0·37
Weeds of cultivation ...	61	5·54	56	2·33
Totals ...	76	6·90	79	3·28

* The name of the 1789 Settlement having been transferred to the one founded in 1792, the present Settlement, which occupies the site of the 1789 one and which dates from March 1858, has been named PORT BLAIR in honour of the original founder. The name *Port Cornwallis* is still used to designate the *site* of the Settlement in North Andaman that existed from 1792 to 1796.

The rate per annum for the second period requires a slight correction by the deduction from it of the rate per annum of disappearance of naturalised species. We have seen that one introduced plant occurring spontaneously in 1866 was only under cultivation in 1889 and 1890 and that three of the 1866 weeds were not met with in 1889 or 1890. These 4 species, therefore, give a disappearance rate of $\frac{4}{2\cdot4}=\frac{1}{6}$, or 0·16 species per annum, and the corrected rate for Period II is thus 3·28−0·16, or 3·12 species per annum.

When we find on comparing the two periods that the rate of introduction in the second is only 3·12 species, as compared with 6·90 in the first, we naturally endeavour to find some explanation of the discrepancy. But, unfortunately, no very satisfactory explanation offers itself. So far as cultivated species are concerned, we are not in a position to compare the 15 naturalised species of 1866 with the 23 similar species of 1890, but only with those 9 species that had been both introduced and naturalised subsequent to 1866. The proportions indicated by these two classes being 1·36 : 0·37 evidences a rate of naturalisation per annum $3\frac{1}{2}$ times as great for the earlier as for the later period. But when the circumstances of the case are considered we are not surprised that the difference should be so great; we are, rather, astonished at its being so small. Owing to the abandonment of the 1789 Settlement the species that had been introduced while it existed were left to their fate, and it would be no more than reasonable to expect that when the new Settlement was founded in 1858, and when Mr. Kurz visited it in 1866, the majority of the common tropical cultivated species had already become fairly naturalised. So far, however, was this from being the case that we find there were in 1866 only 15 such species naturalised, and we are compelled to conclude either, that the original settlement was very ill provided for, or that the species which on *a priori* grounds we might consider likely to hold their own in the struggle for existence in an abandoned settlement are really far from being able to do so. Now not only is there no ground for supposing that the Settlement was ill-provided for, but there is ample proof, from the evidence that exists of a direct and extensive reciprocal correspondence between its founders and the first Superintendent of the recently established Hon'ble Company's Botanic Garden at Calcutta, that the number of species introduced at Port Cornwallis was, for a Settlement so young, unusually high. We are compelled, therefore, to accept the other explanation and to conclude that cultivated species are not as a rule able to exist when they have to struggle on equal terms with a native jungle. Without mentioning other instances, we may refer to the lists of *Cucurbitaceæ* and *Leguminosæ* present in 1866 *as cultivated plants only*, yet in 1890 beginning to occur

spontaneously and appearing likely as time goes on to increase perceptibly the numbers of the non-indigenous flora. The greater number of these must have certainly been introduced in the 1789-92 period, and many of them are such as at first sight suggest for themselves the possibility of survival.

Perhaps, however, it ought not to surprise us greatly that species which readily appear spontaneously elsewhere and which are appearing spontaneously in the Andamans now, should, if they were previously introduced, have perished between 1792 and 1858. Most of them are plants that, when they do escape from cultivation and appear spontaneously, affect such situations as waste places, rubbish heaps, road-sides, hedge-rows and margins of clearings,—situations that have at least this in common, that they afford their denizens abundance of air and light. Many of them too are herbaceous, or at most fruticose, and the native jungle as it reinvades the abandoned clearings overshadows them and either chokes them completely, or by merely preventing them from flowering, makes their fate only a matter of time. Even trees that seem quite naturalised in clearings must soon succumb to the weight of creepers that rapidly overload them in a forest.

If, however, the survival of even a small proportion of the cultivated species abandoned in 1792 will suffice to explain the higher rate of naturalisation during Period I, deducible from the figures in TABLE III (*Carica Papaya* and *Cocos nucifera* are excellent examples of such survival), there is no similar explanation possible for the higher rate of weed-introduction during the same period. A considerable number must have been already introduced by 1792, and, though many doubtless yielded to the influences adverse for naturalised cultivated species, weeds are often proverbially tenacious of life and a good few, as the notes against them show, in place of avoiding the jungle are actually penetrating into it. Taken altogether we find that the rate of introduction during the first period was $2\frac{1}{3}$ times as high as it has been during the second, and the most probable explanation of this higher early rate of weed introduction appears to be that in the dirty grain of an Indian bazaar seeds of most of the commoner Indian weeds are certain to be present. This being the case so many weeds become introduced with the very earliest sowings of any grain that the subsequent rate of introduction of species can be but small. And it is highly probable that for the same reason the rate of weed-introduction becomes year by year diminished. Unfortunately it has not occurred to any one to make observations on these weeds during the interval 1858-66 or 1866-90. And without repeated observations after short intervals of time, especially towards the commencement of a settlement, it is impossible to test the adequacy of this explanation.

But it is not improbable that by the close of another period equal in length to the second the annual fall in the rate of introduction and, indeed, the annual rate of introduction itself will have become very small.

There is not likely to be the same falling off in the rate of naturalisation of intentionally introduced species. For, as the Settlement extends, localities suitable for the spontaneous appearance of already introduced species become year by year more numerous and at the same time the number of species capable of naturalisation becomes increased.

We find on briefly reviewing the results of our enquiry :—

1. That the total number both of naturalised and of unintentionally introduced species constantly increases.

2. That the rate of naturalisation of intentionally introduced species has hitherto been lower than the rate of introduction of unintentionally introduced species.

3. That in both cases the rate has been lower for the second period (1866-90) than for the first (prior to 1866).

4. That this lower rate for the second period is more apparent than real, and is probably due as regards naturalised species to the survival of some cultivated species left to their fate when the early Settlement (1789-92) was abandoned, and as regards weeds to the fact that the greater number of common Indian weeds are necessarily introduced with the earliest sowings of grain.

5. That in both cases the rate has now probably become nearly uniform, but that while for naturalised species it is steady or even uniformly increasing, for weeds it is probably uniformly decreasing.

The first three conclusions are borne out by the facts contained in the lists of species : the fourth is an expression of opinion, which it is unfortunately now impossible either to endorse or to refute as regards the Andamans ; it is, however, a question worthy of attention during the initial stages of any subsequent similar settlement : the last it will be easy for some future student of the subject to finally dispose of.

In concluding, the writer wishes to express his great obligations to Col. Cadell, v. c., Chief Commissioner of the Andamans, but for whose kind assistance it would have been impossible to collect so many species during his short stay at Port Blair; also to Dr. G. King, F. R. S., C. I. E., for his kindness in supplementing the collection of 1889 with many specimens collected in April 1890.

XIV.—*On some Indian* Psychidæ.—*By* F. Moore, F. Z. S.

[Received 30th October; read 5th November, 1890.]

Genus Babula (Moore).—Wings short, broad, sparsely covered with short very slender brown hair-like scales. *Forewing* triangular; costal margin slightly arched from the base to near its end, the apex rounded, exterior margin oblique; cell broad, extending to beyond half the length of the wing; costal vein at its base some distance from the costal margin; sub-costal vein angled near end of the cell, five-branched, the first and second branches parallel, the first arising at some distance and the second at an angle before end of the cell, third branch trifurcate at one-fourth beyond end of the cell; discocellular veinlets bent inward at the middle, the radial vein extending from their angle; within the cell are two discoidal veinlets starting from the upper and lower end of the second discocellular, these coalescing near middle of the cell area and extending to its base; median vein four-branched, angled at its lowest branch, the two upper branches contiguous and starting together from end of the cell, the two lower branches wide apart; submedian vein convexly-angled upward at its middle, and with a short outwardly-oblique lower spur starting from one-fourth of its base. Hindwing oval, broad; subcostal vein two-branched, the first branch arising before end of the cell; the cell broad; upper discocellular veinlet angled outward, the radial extending from the angle; two discoidal veinlets within the cell starting from the upper and lower end of the second discocellular veinlet and coalescing at the middle of the cell area; median vein angled at end of the cell, four-branched, the two upper branches starting from angles at end of the cell; a submedian and two internal veins. *Body* slender; abdomen short, slightly pilose; palpi small, pilose; antennæ short, bipectinated, the pectinations delicately plumose and long at base of the shaft; legs slender, nearly naked, middle and hind tibiæ with a long appendage.

Babula grotei (Moore).—Upper and underside uniformly pale cupreous-brown. Wings sparsely covered with short very slender laxly-disposed hair-like scales; cilia long, dense. Expanse of wings $\frac{11}{12}$th of an inch.

Habitat. Calcutta. (Type in Coll. F. Moore).—The type specimen was reared from larva, found by the late Arthur Grote, near Calcutta, feeding upon the Bábul (*Acacia arabica*). The larva forms an elongated, narrow, cylindrical case about three-fourths of an inch long, and uniformly covered with minute granular particles of bark.

The following are descriptions of two allied genera and species of

Psychids—one of which is found in the Calcutta District, the other in the N. W. Himalayas. These two forms are as follow :—

Genus Rasicota (Moore).—Wings sparsely clothed with short whitish hair-like scales. *Forewing* short, narrow, triangular; costal margin arched before the end, apex somewhat acute, exterior margin oblique, posterior margin short; costal vein short; subcostal vein three-branched, second and third starting from end of the cell; the cell narrowest at its upper end; discocellular veinlets oblique, angled outward; radial vein from their angle; a discoidal veinlet emitted within the cell from end of lower discocellular; median vein four-branched, the two upper branches on a foot-stalk from end of the cell; submedian vein with a lower branch from its middle towards the base. Hindwing short, apex convex; subcostal vein two-branched; radial vein from below end of the cell; discoidal veinlet within the cell from end of lower discocellular; four median branches; a submedian and an internal vein. *Body* moderately robust, abdomen extending beyond the hindwings; antennæ bipectinated, plumose.

Rasicota albescens (Moore).—Fuliginous-white, wings and body sparsely clothed with short whitish hair-like scales; antennæ and anal segments fulvous-yellow. Expanse $\frac{11}{12}$ths of an inch.

Habitat. Calcutta District (*Arthur Grote*).

This species forms a long, narrow, somewhat naked fusiform silken case.

Genus Moffatia (Moore).—*Forewing* long, rather narrow, apex somewhat acute, exterior margin oblique, posterior margin short; costal vein stout, distant at the base from the costa and extending two-thirds from the base; subcostal vein slender, scarcely apart from the costal, four-branched, the fourth or lower branch extending to a little below the apex, the first branch emitted before end of the cell, second branch from end of the cell, third branch at half-way between the cell and the apex and terminating on the costa above the apical angle; discoidal cell long, reaching two-thirds of the wing, very narrow at the base and widening out at the end; discoidal veinlet within the cell, slender, anastomosing with the median vein near its base; upper and lower discocellular veinlets of equal length, bent inward at their juncture; two radial veins, one from the upper end of the discocellulars, the other from the angle of their junction; median vein stout, four-branched, the two lower branches extending to near the posterior angle, the two upper to middle of the exterior margin and anastomosed at their base; submedian vein long, extending to the angle, recurved, with a wide interspace between it and the median vein, and emitting a short, straight lower branch at half its length. *Hindwing* short, trian-

gular; costal margin convex, apex acute, exterior margin convex; costal vein slender, subcostal reaching to the apex; cell broad; discoidal veinlet slender, straight, emitted within the cell from lower angle of the upper discocellular veinlet and extending to base of the cell; a radial veinlet emitted from upper angle of the discocellular and terminating below the apex, lower discocellular oblique, straight; median vein long, three-branched, the branches at equal distance; submedian vein and internal veins long, extending to the margin. Antennæ broadly bipectinated, the branches plumose to the tip; thorax thick, round, plumose; head and palpi inconspicuous, hidden in dense plumose hairs; abdomen very long, extensile and mobile, densely covered with long plumose hairs, and ending in a naked point which is either concealed by the long hairs extending like a tail beyond the abdomen, or exposed, the plumose hairs parting and curling outwards and upwards; legs nearly naked; forelegs very long, tibia with a long spur; first joint of tarsus as long as all the rest; middle legs shorter; hindlegs shortest and more slender.

Moffatia plumicauda (Moore).—Wings hyaline, fuliginous, very sparsely covered with minute hair-like scales, not sufficiently numerous to detract from the perfectly vitreous appearance of the wings; costal margins and the cilia fuliginous-black; veins distinct and black. Antennæ black, bipectinated, the branches plumose to the tip; thorax and head covered with dense black plumose hairs; abdomen of a reddish-yellow where naked, but appearing densely black from the long black plumose-hairs which cover it; anal point naked or concealed by long plumose-hairs like a tail, the hairs parting and curling outward and upward; legs black. Expanse 1 inch.

Habitat. Upper Kunáwar, N. W. Himalaya. (In Coll. Col, A. M. Lang and F. Moore).—"Larval case fusiform, about $1\frac{1}{4}$ inch in length, formed of tough silk covered with short sticks of dry grass. The larva feeds with the three anterior segments protruded from the portable case. The pupa before emergence of imago inverts its position within the case, and the imago emerges from the upper pointed end, the lower, blunter end is closed by a film of silk firmly attached to some rock. The imago is observed basking on rocks, and flies off, when disturbed, with very rapid and devious flight, more like a wasp or bee than a moth. It is seen flying from morning till 4 p. m., chiefly on cliffs, from end of October and November." (Lang's MS., notes.)

XV.—*A new Species of* Diptera *in the Collections of the Indian Museum*—Dilophus Graciosus, *N. Sp.*—*By* J. M. F. Bigot.

[Received 31st October; read 5th November, 1890.]

Long. ♂ = 2 *millim.* ♀ = $2\frac{3}{4}$ *millim.*

♂. *Omnino nigro nitente, halteribus nigris; alis albidis, stigmate parvo, nigro.*

Entièrement d'un noir luisant; balanciers noirs; ailes blanchâtres; stigmate petit, noir.

♀. *Fulva. Capite, antennis, palpis, haustello, spinos thoracis, halteribus, scutello, dorso segmentis, abdominis tibiis, tarsis, femoribus posticis, apice, nigris; alis pallidissime fusco tinctis, stigmate nigro, magno.*

D'un fauve rougeâtre; la tête, les antennes, les palpes, la pipette, les épines du prothorax et du *tergum*, les balanciers, quelques macules sur les flancs au dessous des ailes, les tibiæ, les tarses, l'extrémité des femurs postérieurs, le tout, d'un beau noir; les ailes, presqu'hyalines très légèrement teintées d'un roussâtre tout pâle, stigmate grand et noir.

In copula 1. ♂. 1 ♀.

Dharmsala, Indes, Major Sage.

XVI.—*Preliminary List of the Butterflies of Madras.*—*By* Lieut. E. Y. Watson. (*Communicated by* E. Thurston, Esq.)

[Received July 9th :—Read 5th November 1890.]

The following list of Madras Butterflies is compiled from a collection made between March and the middle of August, 1889. The total number of species obtained is only 74; but there is no doubt that, if the observations had been extended throughout the entire year, this number would be increased by at least twenty additional ones. For the first three months of this period there was little or no rain; but from the 1st June till the middle of August the rain, though never very heavy, was more or less continuous, comparatively few days passing without at least a slight shower. It will be noticed that only the typical wet-season forms of *Mycalesis mineus*, *Melanitis leda*, and *Junonia asterie* were met with. Presumably the corresponding dry-season forms would be met with from November till February.

Family NYMPHALIDÆ.

Sub-family EUPLŒINÆ.

1. *Danais limniace*, Cramer. March to August; very common.
2. „ *septentrionis*, Butler. June, July; occurs occasionally with the preceding.
3. „ *chrysippus*, Linn. March to August; very common.
4. „ *genutia*, Cramer. March to August; very common.
5. *Euplœa core*, Cramer. March to July; very common.
6. „ *coreoides*, Moore. June and July; a few specimens only.

Sub-family SATYRINÆ.

7. *Mycalesis mineus*, Linn. April and June, 10th August ocellated form only.
8. *Melanitis leda*, Linn. August; not common. Form *ismene* not met with.

Sub-family ACRÆINÆ.

9. *Telchinia violæ*, Fabr. March to August; very common.

Sub-family NYMPHALINÆ.

10. *Ergolis ariadne*, Linn. July, August; not common.
11. *Atella phalantha*, Drury. April to August; Very common.
12. *Precis iphita*, Cramer. May to August; very common.
13. *Junonia almana*, Linn. The ocellated form, *J. asterie*, occurs commonly from March to August.
14. „ *lemonias*, Linn. March to September; very common.
15. „ *hierta*, Fabricius. March, June, and August; fairly common.
16. „ *orithyia*, Linn. March, May and August; fairly common.
17. *Neptis varmana*, Moore. April to August; not uncommon.
18. *Hypolimnas bolina*, Linn. March to August; very common.
19. „ *misippus*, Linn. March, April, July and August; not so common as *H. bolina*.
20. *Cyrameis cardui*, Linn. One specimen obtained in October, 1888.
21. *Charaxes fabrius*, Fabricius. One specimen obtained in April.

Family LYCÆNIDÆ.

22. *Curetis thetis*, Drury. June and July; not common.
23. *Chilades laius*, Cramer. April to August: very common.

24. *Zizera gaika*, Trimen. Only observed in May, but probably common.
25. „ *otis*, Fabricius. April to August; very common.
26. „ *lysimon*, Hübner. April to August: very common.
27. *Tarucus plinius*, Fabricius. May to July; fairly common.
28. *Castalius rosimon*, Fabricius. May: a few specimens only.
29. *Everes argiades*, Pallas. Only a single male obtained in May.
30. *Catochrysops strabo*, Fabricius. May; very common.
31. „ *corejus*, Fabricius. April and May; very common
32. „ *contracta*, Butler, July; very common. Possibly a form of the preceding, but the male is easily distinguished by its smaller size, and brighter colours.
33. „ *pandava*, Horsfield. July and August; very common.
34. *Polyommatus bœticus*, Linn. May; not common.
35. *Lampides ælianus*, Fabricius. April to July; common.
36. *Rathinda amas*, Fabricius. A single specimen in July.
37. *Dendorix epijarbas*, Moore. A single specimen obtained by the Museum collector in July.
38. *Rapala melampus*, Cramer. May and July; not common.
39. *Virachola isocrates*, Fabricius. A single specimen in July.
40. *Aphnæus elima*, Moore. A single specimen in June.

Family PAPILIONIDÆ.

Sub-family PIERINÆ.

41. *Leptosia xiphia*, Fabricius. March to August; very common.
42. *Terias hecabe*, Linn. Typical. May and June; common.
„ „ form *hecabeoides*. June and July; common.
„ „ „ *æsiope*. May to July. The commonest of the three forms.
43. „ *venata*, Moore. A single pair in July.
44. *Catopsilia catilla*, Cramer. March to August; very common.
45. „ *crocale*, Cramer. May to August; very common.
46. „ *gnoma*, Fabricius. July, August; not common.
47. „ *pyranthe*, Fabricius. May to August; very common.
48. *Iwias pyrene*, Linn. April to August; very common.
49. „ *marianne*, Linn. Of this two varieties occur. The first, which is near to *I. meridionalis*, occurs commonly from April to August; and the second, which is close to *I. depulpoora*, occurs apparently only in July and August.

50. *Teracolus eucharis*, Fabricius. Common from April to August. The specimens obtained from June to August are referable to *T. pseudevanthe*, Butler.
51. „ *danæ*, Fabricius. May to August; very common.
52. „ *amata*, Fabricius. April to July; very common.
53. *Catophaga lankapura*, Moore. July and August. The specimens obtained seems referable to this species. The females differ greatly in the depth of the yellow colouration of the underside.
54. *Appias libythea*, Fabricius. May to August; not uncommon.
55. *Huphina phryne*, Fabricius. April to August; very common.
56. *Belenois mesentina*, Cramer. March to August; very common.
57. *Delias eucharis*, Drury. July and August.

Sub-family PAPILIONINÆ.

58. *Papilio dissimilis*, Linn. Two specimens in May.
59. „ *panape*, Linn. A single specimen in May. Approaches *F. dravidarum*.
60. „ *hector*, Linn. June to September; very common.
61. „ *aristolochiæ*, Fabricius. March to June; not very common.
62. „ *erithronius*, Cramer. March to August; very common.
63. „ *polytes*, Linn. March to August; common. All three forms of female occur.
64. „ *polymnestor*, Cramer. Three specimens in June.
65. „ *agamemnon*, Linn. March to August. The commonest Madras *Papilio*.

Family HESPERIIDÆ.

66. *Badamia exclamationis*. Fabricius, June to August; common.
67. *Parata chromus*, Cramer. June to August; common.
68. *Chapra mathias*, Fabricius. April and May; probably common, but only a few specimens obtained.
69. *Parnara guttata*, Bremer. Two specimens of the form *bada* obtained in July.
70. *Suastus gremius*, Fabricius. June to August; common.
71. *Telicota bambusæ*, Moore. April to August; common.
72. *Ampittia maro*, Fabricius. A single female in July.
73. *Taractrocera mævius*, Fabricius. A single specimen in September.
74. *Astictopterus salsala*, Moore. A few specimens of the form *stellifer* in June and July.

In addition to the species recorded in the above list the Madras Museum collection contains the following species captured within the

limits of the city of Madras:—*Curetis phœdrus*, Fabricius; *Hebomoia glaucippe*, Linn; *Nepheronia fraterna*, Moore (form *ceylonica*); *Gomalia albofasciata*, Moore; *Udaspes folus*, Cramer, and *Hesperia galba*, Fabricius.

XVII.—*A new Trap-door Spider from Orissa.*—*By* Surgeon J. H. Tull Walsh, I. M. S.

[Received Oct. 27th:—Read 5th November, 1890.]

MYGALIDÆ.

Adelonychia, n. g.

Adelonychia nigrostriata, ♀, n. sp.—At present the following description will be that of the genus also. The spider, which I think is not full grown, measures 10 mm. The falces are reddish-brown in colour with long fangs which act vertically. Pedipalpi of medium length, the terminal joint furnished with a black pad of strong hairs. Eyes: anterior and central pairs large and of a blackish-brown colour, the hind centrals and hind-externals small and pearly white. Cephalothorax reddish-brown above, whitish yellow below; fovea transverse with eight dark, shallow grooves radiating from it. The cephalothorax is markedly convex in front between the two anterior dark markings and slightly convex over the remaining part. Abdomen oval, truncated in front and more convex on the upper than on the under surface. The ground colour above is greenish-grey with a central black stripe and seven well marked black lateral striæ directed downwards and slightly backwards from the central line. The entire upper surface of the abdomen is covered with fine light-coloured hairs. Under surface of abdomen dull grey, the four lung sacs visible as small whitish spots; two pairs of whitish spinnerets. Legs: relative length 4, 1, 2, 3, pale reddish yellow above, almost white below. Tarsi without hooks (?) but terminating in brush-like black pads. Falces, pedipalpi and legs thickly covered with strong blackish-brown bristle-like hairs.

On the 19th January of this year I was out looking for ants in the forest near Khurda and while digging round the roots of a Banyan tree I turned up a tube with a lid which I at once recognised as the home of a trap-door spider of the "cork nest" class. I had unfortunately cut obliquely through the tube, but the lid and hinge were intact. Having found one tube I began to dig carefully round the tree, and was successful in finding an almost perfect specimen with the spider inside. The trowel cut through the extreme lower end of the tube and disclosed the spider who made no attempt to escape downwards but clung tenaciously to the under surface of the lid. In order to enclose the spider and complete the tube, I went down to a neighbouring tank and

covered the cut end with mud. Although I continued to dig for some time in the neighbourhood I did not find any more specimens, and shortly afterwards was obliged to leave Khurda and return to my head-quarters, taking with me the two nests and the captive spider. The situation of these nests is worthy of notice. They were in a cool sheltered spot which, as the tree would be a favourite resort for insects, no doubt formed an excellent hunting-ground for the spiders. The ground in which the tubes were found was sloping and bare. The spider found in the second nest was kept alive until the 8th of February and fed on flies, small beetles etc., but although I watched very carefully I never saw her come out of her nest and failed even to surprise her at night. All these spiders are shy and nocturnal in their habits, and there is no doubt that she did come out, as the bodies of flies placed close to the door of the nest at night were always found to be sucked dry in the morning. On one occasion I lifted the door and propped it half open with the body of a spider; during the night the body was removed and the lid closed down. Once or twice when I endeavoured to raise the lid of the nest the spider strenuously opposed me by clinging to the undersurface; at other times I was able to raise the lid and then the spider retreated to the bottom of her tube and never made any attempt to escape. When I wanted to remove the spider to put her into spirit I was obliged to stir her up with a straw before she would bolt. She rushed out and ran down on to the floor, but stayed there crouching close down to the matting and was evidently much dazzled by the bright sunlight.

The larger tube measured 30 mm. by 16 mm. at the opening and 20 mm. at the widest part near the lower extremity. The whole inner surface was lined with a tough whitish brown fibrous membrane. The hinge was of the same material and covered about one-third of the edge of the lid. The diameter of the lid on the upper surface was about 20 mm., and this surface was covered with earth of exactly the same colour as the surrounding ground, making discovery almost impossible except by accident. The under surface of the lid was strongly convex and covered with tough web similar to that lining the tube. The greatest thickness of the lid was in the centre, gradually decreasing towards the margin which was thin and fitted tightly over the aperture of the tube.

The tube in which the living spider was found was much smaller than the one just described, and as I wished to preserve the specimen intact, I did not make any measurements. There can, I think, be no doubt that both tubes belonged to the same species, and Moggeridge distinctly states (*Trap-door Spiders*, pp. 123, 127, Ed. 1873) that as the spiders increase in size they enlarge their dwellings accordingly.

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XVIII.—*Natural History Notes from H. M.'s I. M. Survey Steamer "Investigator," Commander* R. F. HOSKYN, R. N., *Commanding—No.* 17. *A List of Diamond Island Plants.—By* D. PRAIN.

[Received and read—7th May 1890.]

§ INTRODUCTORY.

Diamond Island is a small lozenge-shaped islet off the Arracan coast. It is situated at the mouth of the Bassein River, in Long. 94° 18′ E. and Lat. 15° 51′ N., about 5 miles from Pagoda Point, 8 from Cape Negrais, and 9 or 10 from the lighthouse on Alguada reef. Its length is somewhat under a mile and a half, and it is about three quarters of a mile wide. The N. E. and S. W. corners which terminate its longer axis rise rather abruptly from the sea. Except, however, at the extreme eastern end its shore all round is rather bluff and rises rapidly to what is rather a central small plateau than a ridge, the general level of this central portion being about sixty feet above the sea. There are three small breaks, however, in the sea-face; a little water-channel, dry in November, opens to the north; another, with a very little water in November, opens to the south; a third, somewhat larger and quite near to the last, has at one time found its way to the sea through the small patch of flat land on the east, but a bund having been thrown across its course, about 100 yards from the sea, its channel has been converted into a tank about 150 yards long and 40 wide.

The island is said never to have been occupied by the Burmese, and has evidently been originally densely wooded.

The greater part of it is indeed densely wooded still, but a corner has been completely cleared between the watercourse that has been converted into a tank and the watercourse that passes south. On the cleared high ground between these two streams stands a telegraph office with a house for the telegraph-master attached; a little way off are servants' quarters. The clearing has been extended across this latter stream for a short distance, so as to provide a site for a shelter-hut for Bassein pilots while they await vessels bound for that port. Between the tank-bund and the sea, but nearer to the tank and close to its overflow, stand two Burmese huts occupied by collectors of turtles' eggs; between these huts and the beach is situated a small European graveyard. At the outlet of the other streamlet and opposite the safest landing place is a boat shed; from this point eastward for about 400 yards—along the sea-view of the telegraph-office, in fact—the jungle has been cleared away down to the beach. Everywhere else the jungle along the sea-face of the island remains intact. A plantain garden and a paddock of considerable size have been cleared on the central plateau behind the telegraph-office; elsewhere the jungle remains untouched; altogether between two-thirds and three-fourths of the surface of the island has not been interfered with. The beach itself consists of deep soft sand in which the streamlets disappear before they reach the sea; at low tide, however, long reefs, extending south and west of the island proper for half a mile or more, are laid bare. On the east side, where the telegraph cable lands, no reefs appear; at the north-west corner they do, but only extend seaward for 50 or 60 yards. The reefs consist of the same sandstone that forms the Arracan Yomah and that appears again first in the Andaman and afterwards in the Nicobar group of islands; they are altogether without coral.

The reefs and pools between them are remarkably destitute of marine vegetation, *Padina pavonia* and *Caulerpa clavifera* being the principal species, and both being in very small quantity. Not only are there very few *growing* Algae, but very few are washed ashore; these consist chiefly of a small green *Sargassa*. The absence of the submarine meadows of marine *Hydrocharidæ*, so characteristic of the otherwise similar pools among the coral-encrusted reefs of the Great Coco, is very striking. There is no mangrove belt on any part of the shore, unless it be considered as represented by some small patches of *Avicennia officinalis* on the reefs about 30 paces from the beach; the individual plants send their roots along the seams between the layers of sandstone for considerable distances, and these give off rootlets that rise vertically

through the sand and mud, exposing to the water of the sea at high tide, to the air and the sun at low tide, from 6 inches to a foot of a structure as thick as the little finger and of the consistence of *solah* pith. The jungle along the south and east sides of the island commences at the edge of the sandy beach, the roots of the trees being washed by the waves at very high tides; the trees that grow at this line are *Thespesia populnea*, *Pongamia glabra*, *Erythrina indica*, *Terminalia Catappa*, *Stephegyne diversifolia*, and *Ficus Rumphii*. East of the cleared part in front of the telegraph office and round as far as the graveyard, are a number of large *Tamarind* trees; it is not improbable that these have been planted. One specimen of *Terminalia Catappa* growing close beside the boat house differed from all the others in being in flower. There is no doubt that this particular tree is *T. Catappa*, and there is hardly a doubt that it is an introduced tree. But that the others (and it is a plentiful species in Diamond Island) which were all, like those on the coast near Port Blair in the Andamans, and like those seen a week later on Table Island and the Great Coco, in almost ripe fruit in November and December, are quite wild and indigenous in the island scarcely admits of a doubt.* Underneath these trees along the south side occur *Hibiscus tiliaceus*, not plentifully, however, and, especially towards the south-west angle of the island, *Desmodium umbellatum*. On the west side of the island, which is the most weather-beaten side, the trees are not so tall, and they are fewer in number, though all these species except *Pongamia* appear. But close to the beach we find there is a dense hedge-like mass of *Desmodium umbellatum*, *Tabernaemontana crispa*, *Premna integrifolia* and *Clerodendron inerme*, with here and there some bushes of *Vitex Negundo*. All these species occur on the north side of the island also, and at the extreme north-east corner there is a considerable patch of *Guettarda speciosa*. All round the island *Canavalia ensiformis* is plentiful; it is associated on the western sea-face with *Pueraria phaseoloides*, *Ipomoea grandiflora* and *Ipomoea digitata*; the last named species is common also in the interior. On the south side a form of *Capparis sepiaria*, the most plentiful of the interior climbers, comes to the very outer limit of the jungle all along; it is here and there accompanied by *Colubrina asiatica*. There are several patches of *Ipomoea biloba* on the beach, but the species is not so common as it usually is in such situations; and *Ipomoea denticulata*, which has not been generally believed to occur so far north, is many times more plentiful. Near the mouths of all three streamlets, and also at the almost bare south-western corner of the island, there are considerable patches of *Cyperus pennatus*. The cleared space near the telegraph-office is mainly covered by a short turf

* As regards Great Coco Island a doubt on the point is impossible.

in which *Eleusine indica* is the only grass that appears in tufts; behind the boat house is a tangled patch of *Colubrina asiatica* and *Caesalpinia Bonducella;* on the road leading from the boat house to the telegraph office is a quantity of *Ipomoea denticulata,* at the back of the office a large patch of *Adenostemma viscosum,* between the office and the servants' quarters a large patch of *Ocimum basilicum,* lower down and near the tank two or three extensive patches of *Cassia alata. Vernonia cinerea* is very common all over the older clearing, but *Ageratum conyzoides,* usually such a common weed, is quite rare as yet. *Urena lobata* is common towards the edge of the clearing nearest the jungle, but is less common than *Melochia corchorifolia* is; the latter is also the commonest weed in the newer clearing in the centre of the Island. *Scoparia dulcis* is plentiful in both the old clearing and the new, but the common *Sidas* are conspicuous by their absence. The wet soil near the edge of the tank is covered with broad patches of *Euphorbia thymifolia;* associated with it is *Vandellia crustacea* which is, however, less plentiful: nearer the tank still, or even growing in the shallow water at the eastern end, are *Sphenoclea zeylanica, Hydrolea zeylanica, Limnophila conferta, Scirpus articulatus* and *Ceratopteris thalictroides,* all very profuse. In the tank itself grows *Nymphaea Lotus,* but not very commonly; the red form is not present*; *Nymphaea stellata* too is absent; *Nelumbium speciosum,* however, is there. Perhaps the most interesting water plant present is *Limnanthemum parvifolium,* only known previously from the transgangetic peninsula through a gathering in Chittagong by Hooker and Thomson and one in Tavoy by Wallich. The present gathering thus comes in midway between these two and perhaps indicates that the species only requires to be looked for in order to be found elsewhere in lower Burma. Besides the *Tamarinds* already referred to, there are near the houses of the Burmans some trees of *Moringa pterygosperma* that have evidently been introduced; in the same situation there are also a few *Coco-nut* trees and some *Plantains.* In the central clearing the telegraph master shewed me what he imagined to be Mangosteen trees belonging to him; the trees are, however, not trees of *Garcinia mangostana* but of *Garcinia cornea.* He had, beside these, some trees of *Citrus medica* and *C. Aurantium* not doing very well; there were close by also some trees of each of the species *Myristica glauca, Artocarpus Chaplasha* and *Antiaris toxicaria,* all either planted or preserved when the clearing was made; the present telegraph-master, who has been there many years, says they have been there since before his time. In his plantain garden, where he has some of the finest fruit-giving varieties and all

* In Great Coco Island it is only the red variety of *N. Lotus* that occurs in its small lake.

bearing well, there are the ordinary tropical vegetables; the only one that is noticeable from our present point of view is the bird's-eye chillie (*Capsicum minimum*) which here, as in the Andamans and in Great Coco Island, has spread itself everywhere about the clearing and is even penetrating into the adjacent jungle. In front of the telegraph-office there are two rows of very weather-beaten Coco-nut trees of which only 14 are now left; probably if planted or sown along the edge of the beach they would have done much better; there is not at present, it may be remarked, a single Coco-nut tree in this situation anywhere round the island.

The commonest tree throughout the island is *Bombax malabaricum*, and next to it in point of numbers is *Albizzia procera;* towards the western end of the central table-land the latter is the more plentiful species, those trees at the extreme edge being stunted and weather-worn. Among the other trees and shrubs observed were *Chailletia gelonioides* (very abundant on the south side of the island,) *Connarus gibbosus*, *Ellipanthus sterculiaefolius*, *Cnestis ramiflora* (also very abundant on the southern slope of the island,) *Lagerstræmia Flos-Reginae* (a common tree on the Eastern part of the island,) *Ixora rugulosa*, *Pavetta indica*, *Psychotria adenophylla*, *Ehretia laevis*, *Heterophragma adenophyllum* (not uncommon,) *Bridelia tomentosa* and *Flueggia microcarpa* (both frequent,) *Ficus hispida* (not frequent,) *Macaranga Tanarius* (the only *Macaranga* present and common on the south side of the island.) A common and very striking undershrub is *Leea parallela;* in the opener ground on the western weather-beaten side *Osbeckia chinensis*, *Vernonia cinerea* and *Anisomeles ovata* are common herbs; along the water course leading to the north side of the island *Adiantum lunulatum* occurs, not frequently, however, and it does not appear to be anywhere else on the island; the only other ferns met with were the water-fern *Ceratopteris*, and a climbing species, *Lygodium flexuosum*. Quite as striking as the absence of ferns is the absence of any species of *Selaginella;* still more striking, perhaps, considering the proximity of the island to Burma, is the absence of Bamboos.

In the interior the climbers met with were *Cyclea peltata* (frequent,) *Abrus precatorius* (exceedingly common,) *Mucuna monosperma*, *Entada scandens*, *Luffa ægyptiaca* (only on the western side and, like the *Capparis* and like *Ipomoea digitata*, spreading over the sea-face as well as common in the interior jungle.) *Willughbeia edulis* (only met with once,) *Ichnocarpus frutescens* and *Dregea volubilis* (both common,) *Erycibe paniculata* (spreading over adjacent species, but hardly a climber,) *Thunbergia laurifolia* very common, as are *Dioscorea glabra* and *Smilax macrophylla;* a *Calamus* (*C. tigrinus* Kurz?) forms a great part of the

interior jungle; *Scindapsus officinalis* is very common everywhere in the interior and coast zones alike and is the principal epiphyte. Not a single orchid was seen anywhere in the island. A few *Fungi* were found growing on dead wood; the season of the visit was apparently unsuitable for terrestrial species.

The visit of H. M.'s I. M. Survey Steamer "Investigator", in November 1889, to leave a survey-party is not the first scientific visit that has been paid to this island. Almost exactly one hundred years before it was visited by Captain Kyd and Lieut. Colebrooke* who in December 1789 determined its position, both absolutely and in relation to the adjacent headland on the Arracan coast. It is not probable that botanical collection engaged the attention of these officers; but during another visit by a scientific party (April 1866) in H. M's. I. M. S. S. "Prince Arthur" Mr. Kurz, who was on board, landed and collected a few specimens. Mr. Kurz makes a very interesting remark on this visit which is worth repeating here:—"I had only a few minutes stay at "Diamond Island in Pegu, but I was struck, when afterwards coming "to the Andamans, by the similarity, nay rather identity, of the shore "vegetation."† The present collection is itself the result of only a few hours' work, and is larger than it otherwise could have been, owing to the help given by Dr. Alcock, Surgeon-Naturalist of the "Investigator," who devoted the time during which the state of the tide prevented him from being on the reefs to assisting the writer in obtaining specimens of plants. The 95 species that it includes form it is true only a part of what the island would yield to any one whose stay there could be prolonged; but it is hardly too much to assume that they are fairly representative of the flora of this island. And as its geographical position and geological structure both point to it as the first stepping-stone in the series of islands connecting Arracan with Sumatra (through the Andamans and Nicobars) the nature of the flora seems worthy of investigation.

The following is the method of presentation adopted:—

1. A list of the plants collected is given; any interesting feature as regards a particular species is noted where it seems necessary to do so, and in every case the dissemination of the species is adverted to.

2. A tabular view of the distribution of the species is presented,

* Asiatic Researches, Vol. IV, p. 317; the date of this visit was 14th December 1789.

† *Report on the Vegetation of the Andaman Islands*, (1870) p. 15. Mr. Kurz uses the word Pegu in an extended sense which means all Lower Burma; Diamond Island belongs to Arracan, not to Pegu proper; Mr. Kurz's remark itself will be discussed further on.

the distribution within transgangetic India being sub-divided as follows:—*a.* Arracan, Chittagong, Assam; *b.* Pegu, Tenasserim, Malay Peninsula; *c.* Andamans (including Coco Islands,) Nicobars, Sumatra and Java. This is necessary for a proper understanding of the *peculiar* features of the flora of the island which forms (or at any rate is an excellent representative of) the area wherein these three lines of distribution meet and in which their species intermix.

3. An analysis in terms of the preceding sections is undertaken and the arithmetical values of the various relationships computed.

§§. List of the Plants collected in Diamond Island.

MENISPERMACEÆ.

1. Cyclea peltata Hook. F. and Thoms. Common.

NYMPHÆACEÆ.

2. Nymphæa Lotus Linn. In the only tank, uncommon; the red form is not present.

3. Nelumbium speciosum Willd. In the tank.

CAPPARIDEÆ.

4. Capparis sepiaria Linn. var. grandifolia Kurz (MSS. in Herb. Calcutta); forma ramis foliisque glabris, foliis floribus et fructu quam in formis varietatum aliarum multo majoribus. Distrib. Table Island and Great Coco Island, (ipse); South Andaman, (Kurz). In Madura Island and in Bali, (Teysmann in Herb. Calcutta). In Timor and in Cochin-China (as Mr. Hemsley informs me) occur forms that connect this very distinct looking form with the typical plants. Branches green; leaves regularly elliptic, retuse; petioles 0·5—0·7 cm. long; laminæ 6—10 cm. long by 4—5 cm. broad, quite glabrous both above and below, or with a few scattered hairs, that soon disappear, on young leaves beneath; flowers 15 mm. in diam.; pedicels 18 mm. long; gynophore 8 mm. long; fruit 12 mm. in diam. (in Java specimens) to 14 mm. (in Diamond Island ones).

In the ordinary Indian plant, which also occurs without any considerable variation in Burma and in Perak, as well as in the S. Indian variety *(incanescens)* and in the Ceylon variety *(retusella)*, the measurements are; petiole 0·2—0·4 cm., lamina 2—3 cm. long by 1·5—2 cm. broad; flowers 7—12 mm. in diam., pedicels 16 mm. long; gynophore 5—6 mm. long; fruit 7—8 mm. in diameter.

Except, however, in the greater size of all its parts—most notable as regards the anthers—which in var. *grandifolia* more than thrice exceed

those in any of the other varieties—this plant differs in no essential character from *C. sepiaria*, Wall.; the ovary as in the type is glabrous, ovoid and pointed, the fruit is spherical and black. It is an extensive climber and in the interior jungle is one of the commonest species; it also extends into and covers the shrubby species of the coast zone.

GUTTIFERÆ.

5. GARCINIA CORNEA Linn. In the telegraph-house garden, cultivated.

MALVACEÆ.

6. URENA LOBATA Linn. Clearing behind telegraph-office.

7. HIBISCUS TILIACEUS Linn. Coast plant, south side of Island.

8. THESPESIA POPULNEA Corr. Coast; very frequent all round the Island.

9. BOMBAX MALABARICUM DC. The commonest tree in the Island.

STERCULIACEÆ.

10. MELOCHIA CORCHORIFOLIA Linn. Very common in the central clearing.

RUTACEÆ.

11. CITRUS MEDICA Linn. In the telegraph-house garden and elsewhere; planted.

CHAILLETIACEÆ.

12. CHAILLETIA CELONIOIDES Hook. f. Very abundant on the south side of the Island.

RHAMNACEÆ.

13. COLUBRINA ASIATICA Brongn. One large bush beside the boat-house, and here and there throughout the Island.

AMPELIDEÆ.

14. LEEA PARALLELA Wall. Very common throughout the Island.

MORINGACEÆ.

15. MORINGA PTERYGOSPERMA Gaertn. Some trees near the huts of Burmans, between the tank and the sea.

CONNARACEÆ.

16. CONNARUS GIBBOSUS Wall. In the interior jungle.

17. CNESTIS RAMIFLORA Griff. Very abundant towards south side of Island.

18. ELLIPANTHUS STERCULIÆFOLIUS Prain. Coast zone, south side.

LEGUMINOSÆ.

19. DESMODIUM UMBELLATUM DC. Shore species; frequent, especially on the west and north sides of the Island.

20. ABRUS PRECATORIUS Linn. Very frequent everywhere in the Island.

21. ERYTHRINA INDICA Lamk. A purely coast species here, as it also is in the Andamans and in Great Coco island. In the Great Coco it is, however, rather uncommon: a striking contrast with the conditions in Diamond Island where this tree forms an almost unbroken ring round the coast.

22. MUCUNA MONOSPERMA DC. Very common in the interior jungle.

23. PUERARIA PHASEOLOIDES Benth. Common on the western sea-face of the Island, climbing over bushes of *Tabernæmontana crispa* and creeping in the grass at the bare south-western corner of the Island.

24. CANAVALIA ENSIFORMIS DC. A climber all round the coast, especially common on west and north sides of the island; not met with in the interior.

25. PONGAMIA GLABRA Vent. Frequent in the line of trees immediately behind the sandy beach.

26. CÆSALPINIA BONDUCELLA Ham. A thicket behind the boat-house.

27. CASSIA ALATA Linn. Two or three large thickets between the telegraph-office and the tank.

28. TAMARINDUS INDICA Linn. Several large trees behind the beach, between the telegraph-office and the graveyard.

29. ENTADA SCANDENS Benth. Common all over the island.

30. ALBIZZIA PROCERA Benth. A common tree, especially in the western half of the island; those trees exposed to the S. W. monsoon are gnarled and dwarfed and weather-beaten.

COMBRETACEÆ.

31. TERMINALIA CATAPPA Linn. Frequent in the beach ring of trees. One tree overhanging the boat-house, and probably an introduced one, was in flower in November; the others were all, as they were in South Andaman and in the Great Coco, in fruit.

MELASTOMACEÆ.

32. OSBECKIA CHINENSIS Linn.; C. B. Clarke in F. B. I. Frequent in the bare grassy slope at the south-western corner of the Island. The form present in Diamond Island differs from typical *O. chinensis* somewhat in size and form of leaves and calyx; in these specimens, leaves

7 cm. : 3 cm., ovate, acute, base subcordate; inflated ovary 6 mm. : 4 mm.; tubular neck of calyx 4 mm. long: 3 mm. diam. at junction of inflated and tubular portions and 5 mm. diam. at mouth. The specimens of this gathering precisely accord with specimens collected by Kurz in Arracan; they agree as to calyx with specimens collected by R. Scott in Pegu; as to leaves they resemble specimens collected on Parasnath and in Chutia Nagpur by T. Thomson, by Kurz, and by J. J. Wood.

LYTHRACEÆ.

33. LAGERSTRŒMIA FLOS-REGINÆ Retz. A common tree in the eastern part of the Island and to the north of the tank.

CUCURBITACEÆ.

34. LUFFA ÆGYPTIACA Mill. Not infrequent on the western side of the Island.

RUBIACEÆ.

35. STEPHEGYNE DIVERSIFOLIA Hook. f. Frequent in and immediately behind the coast zone.

36. GUETTARDA SPECIOSA Linn. Common on the north coast of the Island; this appears to be the first occasion on which the species has been collected so far north as Arracan.

37. IXORA RUGOSULA Wall. Frequent in the interior; previously only known from Pegu and Tenasserim; now, therefore, from Arracan also.

38. PAVETTA INDICA Linn. Common in the interior.

39. PSYCHOTRIA ADENOPHYLLA Wall. Common in the interior.

COMPOSITÆ.

40. VERNONIA CINEREA Less. Waste ground about telegraph-office; also on bare ground at the south-western corner of the Island.

41. ADENOSTEMMA VISCOSUM Forst. var. PARVIFLORA Hook. f. Behind the boat-house.

42. AGERATUM CONYZOIDES Linn. Only a few plants seen near the side of the tank.

GOODENOVIEÆ.

43. SCÆVOLA KŒNIGII, Vahl. On the west and north shores; common.

CAMPANULACEÆ.

44. SPHENOCLEA ZEYLANICA Gærtn. At the margin of the tank eastern end; profuse.

APOCYNEÆ.

45. WILLUGHBEIA EDULIS Roxb. In the interior jungle, only once met with.

46. TABERNÆMONTANA CRISPA Roxb. Very abundant on the west and somewhat less frequent on the north shore. A distinct northern extension to the distribution of this species which has been hitherto known from the Andamans and the Nicobars only. Follicles 3-keeled, green, 2·75 cm. long, 1 cm. anteroposterior, 0·75 cm. lateral diams., sessile avicular (beak slender recurved 6 mm. long) semicircular (ventrally convex, dorsum straight or very slightly concave), when opened flat 2·25 cm. across; endocarp brilliant scarlet.

47. ICHNOCARPUS FRUTESCENS R. Br. Extensive climber; frequent in the interior. Flowers sweet smelling; corolla here pure white, not purple.

ASCLEPIADACEÆ.

48. DREGEA VOLUBILIS Benth. In the interior jungle; frequent.

GENTIANACEÆ.

49. LIMNANTHEMUM PARVIFOLIUM Griseb. Plentiful near the western end of the tank and the only species present. A species with, so far as is known, a somewhat detached distribution.* It is plentiful in the western Deccan and in Ceylon. This gathering is intermediate as to situation between that of Hooker and Thomson (Chittagong) and that of Wallich (Tavoy)—the only two previous gatherings recorded from the Trans-gangetic Peninsula; perhaps it indicates that it would be oftener found if particularly looked for.

HYDROPHYLLACEÆ.

50. HYDROLEA ZEYLANICA Vahl. Swampy ground at west end of tank: plentiful.

BORAGINACEÆ.

51. EHRETIA LÆVIS Roxb. Common; all the specimens from this locality are *absolutely* glabrous; there is no indumentum or any trace of such, even on young branches, on young leaves, or on the youngest flower-buds.

* Another species with a similarly detached distribution is *L. aurantiacum* Dalz., a common species in the western Deccan and Ceylon (from Bombay southwards), and hitherto supposed to be confined te this area. Excellent specimens have, however, been sent (14th December 1889) by H. T. Peter, Esq., from Narayangunge near Dacca, and identified by Dr. G. King, F. R. S.

CONVOLVULACEÆ.

52. ERYCIBE PANICULATA Roxb. *var.* PEGUENSIS, Clarke. A small subscandent wide-spreading tree; leaves elliptic cuneately acuminate; at both ends secondary nerves scarcely visible beneath with dense pancles, white flowers and rusty-tomentose shoots. The present locality stands intermediate between those hitherto recorded for the variety—Chittagong (Hooker,) and Moulmein (several collectors).

53. IPOMÆA GRANDIFLORA Lamk. Very common, climbing amongst the Coast species on the western and northern sides of the Island, and also for a little way amongst the adjacent inland species.

54. I. DIGITATA Linn. Common with the preceding on the western side of the Island.

55. I. DENTICULATA Choisy. By the side of the stream between the boat-house and the pilots' house, beside the path from the boat-house to the telegraph-office, along the cleared slope between the telegraph-office and the sea, and again at the north-east corner of the Island, always plentiful. The distribution of this species, so far as was known in 1883, was (F. B. I. iv, 208) "MALAY PENINSULA; from Mergui southwards. CEYLON; near the sea at Galle. NICOBARS," its further distribution being "Malaya, Australia, Polynesia, Seychelles." But it is now known to extend further up the Bay. It occurs in the Andamans, is exceedingly plentiful on the Great Coco, was collected by Kurz at Kobah on the shores of S. Burma during his latest journey, is very plentiful here in Diamond Island, and was collected by Kurz at Akyab which is still further north. In the Great Coco a curious feature in this species and the next is their habitat. This species converts raised coral "shingle" beaches into purple meadows; on this shingle not a single plant of *I. biloba* is to be met with; flat crescentic stretches of level sand at the heads of bays are completely covered with *I. biloba* and not a plant of *I. denticulata* is to be seen. Whenever a little cleared patch of soil occurs near the sea the two species appear in it plentifully side by side.

56. I. BILOBA Forsk. Sand-beaches on north and west side of island, not plentiful. Also with the preceding species between the boat-house and the telegraph-office.

SOLANACEÆ.

57. CAPSICUM MINIMUM Roxb. In the telegraph-master's garden, cultivated; but also all over the central clearing, spontaneous.

SCROPULARIACEÆ.

58. LIMNOPHILA CONFERTA Benth.; Hook. f. In marshy ground along with *Hydrolea*.

59. VANDELLIA CRUSTACEA Benth. On wet banks of the tank at west side.

60. SCOPARIA DULCIS Linn. In cleared space behind telegraph-office.

BIGNONIACEÆ.

61. HETEROPHRAGMA ADENOPHYLLUM Seem. Frequent in the interior.

ACANTHACEÆ.

62. THUNBERGIA LAURIFOLIA Lindley. Common.

VERBENACEÆ.

63. PREMNA INTEGRIFOLIA R. Br. Littoral species; common.

64. VITEX NEGUNDO Linn. Leaves mostly 4-pinnate. On the seashore of north side of Island, but only in two places.

65. CLERODENDRON INERME Gaertn. Very common on the coast here, and also throughout the whole of the Andaman group.

66. AVICENNIA OFFICINALIS Linn. On the sandstone reefs, but only in two or three places, to the south and west sides of the Island.

LABIATÆ.

67. OCIMUM BASILICUM Linn. Waste ground behind servants' quarters of telegraph-office buildings. This is only *Ocimum* that has here become spontaneous. In South Andaman the true *Tulsi* (*O. sanctum*) is the one that has become naturalised; in the Laccadive group it is the *Ram-tulsi* (*O. gratissimum*) that occurs as if wild.

68. ANISOMELES OVATA R. Br. Here and there in opener parts of the interior and plentiful on the bare part at the south-west corner of the Island; *not* in the cleared space near the telegraph-office.

MYRISTICACEÆ.

69. MYRISTICA GLAUCA Blume. Only one (female) tree seen, near the *Garcinia*.

EUPHORBIACEÆ.

70. EUPHORBIA THYMIFOLIA Burm. On wet banks of the tank, plentiful; seeds red.

71. BRIDELIA TOMENTOSA Blume. Plentiful; absolutely glabrous in every part and in this respect quite like specimens collected by Kurz in Pegu.

72. FLUEGGIA MICROCARPA Blume. A small tree; common in the interior.

73. MACARANGA TANARIUS Muell.-Arg. Plentiful on the south side of the Island. This locality is a very distinct extension northwards for the distribution of this species which has been hitherto known only from South Andaman, Nicobars, Perak and Malacca. Dr. King has very kindly verified this determination for me.

URTICACEÆ.

74. ARTOCARPUS CHAPLASHA Roxb. Only once seen, near the *Garcinia* and *Myristica*.

75. ANTIARIS TOXICARIA Lesch. Only once seen; the tree is close beside the preceding and is said by the Burmans (turtle-collectors) to be the only one on the Island; it may have been planted, but it is difficult to suppose by whom.

76. FICUS RUMPHII Blume. Littoral; a very large tree, commonest on the south side, but plentiful all round the Island.

77. F. HISPIDA Linn. f. In the interior, not very common.

SCITAMINEÆ.

78. MUSA SAPIENTUM Linn. Planted in the telegraph-master's garden.

DIOSCOREACEÆ.

79. DIOSCOREA GLABRA Roxb. Common.

LILIACEÆ.

80. SMILAX MACROPHYLLA Roxb. With *Calamus* and *Dioscorea* forms much of the interior jungle.

PALMEÆ.

81. CALAMUS TIGRINUS Kurz? Very plentiful; not in fruit.

82. COCOS NUCIFERA Linn. Planted only; a double row containing 14 trees in front of the telegraph-office and a few others near the Burmans' huts.

AROIDEÆ.

83. SCINDAPSUS OFFICINALIS Schott. Epiphyte common in the coast zone and the interior also.

CYPERACEÆ.

84. CYPERUS PENNATUS Lamk. On all bare places round the coast whether grassy or rocky; also in mud beside the tank outlet and on the banks of the water-course beside the boat-house.

85. SCIRPUS ARTICULATUS Linn. In the shallow water at west end of tank.

GRAMINEÆ.

86. ELEUSINE INDICA Gærtn. Tufts of this grass occur along the path from the shore to the telegraph-office.

FILICES.

87. ADIANTUM LUNULATUM Burm. Only along the water-course on the north side of the Island.

88. CERATOPTERIS THALICTROIDES Brongn. Common at the west end of the tank.

89. LYGODIUM FLEXUOSUM Sw. Common in the interior.

FUNGI.*

90. HEXAGONIA SIMILIS Berk. On dead wood; interior.

91. HIRNEOLA POLYTRICHA Mont. On dead wood: interior.

92. STEREUM CYATHIFORME Fries. On dead wood: interior.

93. POLYPORUS OCCIDENTALIS Berk. On dead wood: interior.

ALGÆ.

94. PADINA PAVONIA Gaill. On sandstone reefs.

95. CAULERPA CLAVIFERA Agardh. On sandstone reefs.

§§§ DISTRIBUTION OF THE SPECIES OBSERVED IN DIAMOND ISLAND.

A. General.					Name of Species.	B. Special.				
						Trans-gangetic.			Cis-gangetic.	
America.	Africa.	Polynesia.	Australia.	Asia.		Arracan.	Pegu.	Andaman.	India.	Ceylon.
—	—	—	—	×	Cyclea peltata	×	×	—	×	—
—	×	—	—	×	Nymphæa Lotus	×	×	×	×	×
—	—	—	×	×	Nelumbium speciosum	×	×	×	×	×
o	o	o	o	o	Capparis sepiaria	o	o	o	o	o
					VAR. grandifolia	×	—	×	—	—
—	—	—	—	×	Garcinia cornea	×	×	—	×	—
×	×	×	×	×	Urena lobata	×	×	×	×	×

* Mr. Massee, through the good offices of Mr. Hemsley, F. R. S., has very kindly supplied the names of these Fungi.

A. General.					Names of Species.	B. Special.				
						Trans. gangetic.			Cis-gangetic.	
America.	Africa.	Polynesia.	Australia.	Asia.		Arracan.	Pegu.	Andaman.	India.	Ceylon.
×	×	×	×	×	Hibiscus tiliaceus	×	×	×	×	×
—	×	×	×	×	Thespesia populnea	×	×	×	×	×
—	—	—	—	×	Bombax malabaricum	×	×	×	×	×
+	×	×	×	×	Melochia corchorifolia	×	×	+	×	×
×	×	×	×	×	Citrus medica	×	×	×	×	×
—	—	—	—	×	Chailletia gelonioides	×	×	×	×	×
—	×	—	×	×	Colubrina asiatica	×	×	×	×	×
—	—	—	—	×	Leea parallela	×	×	—	—	—
—	×	—	—	×	Moringa pterygosperma	×	×	×	×	×
—	—	—	—	×	Connarus gibbosus	×	×	—	—	—
—	—	—	—	×	Cnestis ramiflora	×	×	×	—	—
—	—	—	—	×	Ellipanthus sterculiæfolius	×	—	—	—	—
—	×	×	—	+	Desmodium umbellatum	×	×	×	×	×
×	×	×	×	×	Abrus precatorius	×	×	×	×	×
—	—	×	—	×	Erythrina indica	×	×	×	×	×
—	—	—	—	×	Mucuna monosperma	×	×	—	×	×
—	—	—	—	×	Pueraria phaseoloides	×	×	×	—	—
×	×	×	×	×	Canavalia ensiformis	×	×	×	×	+
—	×	×	+	+	Pongamia glabra	×	×	×	×	×
×	×	×	×	×	Cæsalpinia Bonducella	×	×	×	×	×
×	×	×	×	×	Cassia alata	×	×	×	—	×
×	×	×	×	×	Tamarindus indica	×	×	×	×	×
×	×	×	×	×	Entada scandens	×	×	×	×	×
—	—	—	—	×	Albizzia procera	×	×	×	×	—
—	—	—	—	×	Terminalia Catappa	×	×	×	—	—
—	—	—	×	×	Osbeckia chinensis	×	×	—	×	—
—	—	—	—	×	Lagerstrœmia Flos-Reginæ	×	×	—	×	×
×	×	×	×	×	Luffa ægyptiaca	×	×	×	×	×
—	—	—	—	×	Stephegyne diversifolia	×	×	×	—	—
×	×	×	×	×	Guettarda speciosa	×	×	×	×	×
—	—	—	—	×	Ixora rugulosa	×	×	—	—	—
—	—	—	×	×	Pavetta indica	×	×	×	×	×
—	—	—	—	×	Psychotria adenophylla	×	×	×	—	—
×	×	×	×	×	Vernonia cinerea	×	×	×	×	×
×	×	×	×	×	Adenostemma viscosum	×	×	×	×	×
×	×	×	×	×	Ageratum conyzoides	×	×	×	×	×
—	—	×	×	×	Scævola Kœnigii	×	×	×	×	×
×	×	×	+	×	Sphenoclea zeylanica	×	×	×	×	×
—	—	—	—	×	Willughbeia edulis	×	×	—	—	—
—	—	—	—	×	Tabernæmontana crispa	×	—	×	—	—
—	—	—	×	×	Ichnocarpus frutescens	×	×	×	×	×
—	—	—	—	×	Dregea volubilis	×	—	—	×	×
—	—	—	—	×	Limnanthemum parvifolium	×	×	—	×	×

A. General.					Names of Species.	B. Special.				
						Trans-gangetic.			Cis-gangetic.	
America.	Africa.	Polynesia.	Australia.	Asia.		Arracan.	Pegu.	Andaman.	India.	Ceylon.
×	×	×	×	×	Hydrolea zeylanica...	×	×	×	×	×
–	–	×	×	×	Ehretia lævis	○×	○×	○×	○×	×
○	○	○	○	○	Erycibe paniculata					
					var peguensis	×	×	–	–	–
–	×	×	×	×	Ipomœa grandiflora...	×	×	×	×	×
×	×	×	×	×	I. digitata	×	×	×	×	×
–	×	×	×	×	I. denticulata	×	×	×	–	×
×	×	×	×	×	I. biloba	×	×	×	×	×
×	×	×	×	×	Capsicum minimum	×	×	×	×	×
–	–	–	–	×	Limnophila conferta	×	×	–	×	×
–	×	×	×	×	Vandellia crustacea	×	×	×	×	×
–	×	×	×	×	Scoparia dulcis	×	×	×	×	×
–	–	–	–	×	Heterophragma adenophyllum	×	×	×	–	–
–	–	–	–	×	Thunbergia laurifolia	×	×	×	–	–
–	–	–	–	×	Premna integrifolia	×	–	×	×	×
–	–	–	–	×	Vitex Negundo	×	×	×	×	×
–	–	–	–	×	Clerodendron inerme	×	×	×	×	×
–	×	×	×	×	Avicennia officinalis	×	×	–	×	×
–	×	×	–	×	Ocimum Basilicum	×	×	×	×	×
–	–	–	–	×	Anisomeles ovata	×	×	×	–	×
–	–	–	–	×	Myristica glauca	×	×	×	–	×
×	×	×	–	×	Euphorbia thymifolia	×	×	×	–	–
–	–	–	×	×	Bridelia tomentosa	×	×	–	×	×
–	×	–	×	×	Flueggia microcarpa	×	×	×	–	–
–	–	–	–	×	Macaranga Tanarius	×	×	×	×	–
–	–	–	–	×	Artocarpus Chaplasha	×	×	–	×	×
–	–	–	–	×	Antiaris toxicaria	×	×	–	×	–
–	–	–	–	×	Ficus Rumphii	×	×	×	×	×
–	–	–	×	×	F. hispida	×	×	×	×	×
×	×	×	×	×	Musa sapientum	×	×	×	×	×
–	–	–	–	×	Dioscorea glabra	×	×	×	×	–
–	–	–	–	×	Smilax macrophylla...	×	×	×	×	–
–	–	–	–	×	Calamus tigrinus ?	×	×	×	×	×
×	×	×	×	×	Cocos nucifera	×	×	×	×	–
–	–	–	–	×	Scindapsus officinalis	×	×	×	×	×
–	×	–	×	×	Cyperus pennatus	×	×	×	×	–
–	×	–	–	×	Scirpus articulatus...	×	×	×	×	×
×	×	×	×	×	Eleusine indica	×	×	×	×	×
×	×	×	×	×	Adiantum lunulatum	×	×	×	×	×
×	×	×	×	×	Ceratopteris thalictroides	×	×	×	×	×
–	×	–	×	×	Lygodium flexuosum	×	×	×	×	×
×	×	×	×	×	Hexagonia similis	×	×	×	×	×
×	×	×	×	×	Hirneola polytricha	×	×	×	×	×
×	×	×	×	×	Stereum cyathiforme	×	×	×	×	×
×	×	×	×	×	Polyporus occidentalis ...	×	×	×	×	×
×	×	×	×	×	Padina pavonia	×	×	×	×	×
×	×	×	×	×	Caulerpa clavifera	×	×	×	×	×

Examining first the general distribution of the Flora we find that, of the 95 species, 36 are species cosmopolitan in the tropics, while, on the other hand, no fewer than 38 are confined to Asia. Of the remaining 21, whose distribution is confined within the old world but extends beyond the limits of Asia, only four occur in Australia, Polynesia and Africa as well as in Asia; two occur in Asia, Australia and Polynesia; four in Asia, Australia and Africa; and three in Asia, Polynesia and Africa. Six are confined to Asia and Australia, two to Asia and Africa, one to Asia and Polynesia. The following table shews this more clearly, and at the same time indicates the relationships that subsist between the distributional features of the species and, on the one hand, their habitat, on the other, their habit.

TABLE I. *Relationship of General Distribution to Habit and Habitat.*

HABIT.					DISTRIBUTIONAL FEATURES.	HABITAT.								
Total.	Trees.	Shrubs.	Herbs.	Climbers.		Cultivated or planted.	Weeds.	Inland sp.	Marsh sp.	Coast sp.	Epiphyte.	Saprophytes.	Marine.	Total.
32	4	5	18	5	Cosmopolitan in the Tropics	5	8	5	3	5	..	4	2	32
1	...		1	...	Almost ditto: absent from Australia	...	...	...	1	...	...	...	...	1
6	2	1	2	1	Throughout Tropics of Old World	...	...	...	1	4	...	...	1	6
2	...	2	...		In Asia, Australia and Polynesia	..	...	1	...	1	...	...	...	2
4	...	2	1	1	In Asia, Australia and Africa	...	...	3	..	1	...	...	...	4
2	...	1	1	...	In Asia, Polynesia and Africa	...	1	...	...		...	...	...	2
7	2	2	2	1	In Asia and Australia ...	...		6	1	...	...	...	...	7
1	1	.	.	...	In Asia and Polynesia ...		...	..		1	.	...	...	1
3	1	...	2	...	In Asia and Africa ...	1	...	..	2		...	...	..	3
37	13	10	3	11	Confined to Asia ...	4	...	23	2	7	1	...	.	37
5	22	23	30	19	TOTALS	10	9	38	10	20	1	4	3	95

There is no progressive feature in the general distribution of the species; while the highest number of any of the classes is that of species confined to Asia, the next highest is that of species cosmopolitan in the tropics. The cosmopolitan or nearly cosmopolitan species are, however, to a large extent cultivated plants and weeds of waste places or marshes. In the case of the species confined to Asia

the proportion of forest species to the whole is 30 : 37, or 81 per cent. whereas in the case of the cosmopolitan and almost cosmopolitan species the proportion of forest species to the whole is 10 : 39, or $25\frac{2}{3}$ per cent. only.

To complete the account of the distribution of these species it is necessary to examine their special distribution throughout South-eastern Asia. From this it is possible to compute the relationships of the Diamond Island flora to those of the three adjacent areas Arracan-Assam, Pegu-Malaya, Andamans-Nicobars respectively.

We find that 77 species are in distribution both Cis-gangetic (*i. e.*, are present in India, or in Ceylon, or both) and Trans-gangetic (*i. e.*, are present in some or all of the three areas whose influences meet in Diamond island). The remaining 17 species are Trans-gangetic only. So that as regards the composition of the Diamond Island flora the Indo-Chinese influence bears to the Indian a proportion of 95 : 77 (or very nearly of 9 : 7); in other words the Indo-Chinese influence is $\frac{1}{9}\frac{8}{5}$, or just under 19 per cent. stronger than the Indian. The details of this distribution are more compactly given in the subjoined table.

TABLE II. *Distribution of the Diamond Island species in S. E. Asia.*

Species both Cis-gangetic and Trans-gangetic;—		77
Common to all the districts	56	
Absent from a Cis-gangetic district;—	7	
Absent from Ceylon only	6	
Absent from India only (*Ipomœa denticulata*)	1	
Absent from Trans-gangetic districts;—	10	
Absent from Andamans-Nicobars only	8	
Absent from Pegu-Malaya only (*Vitex Negundo*) [This sp. is only represented in Arracan by the Diamond I. gathering]	1	
Absent from both Andaman and Pegu (*Dregea volubilis*)	1	
Absent both from a Cis-gangetic and a Trans-gangetic district; [These sp. are all absent at once from the Andamans and from Ceylon].	4	
Species Trans-gangetic only:—		18
Common to the three Trans-gangetic districts:—	10	
Distributed throughout Arracan-Assam district	7	
Represented in Arracan by the Diamond I. gathering only	3	
Carried over ...		95

Brought forward		... 95
Absent from the Andaman-Nicobar district only;	5	
Distributed throughout Arracan-Assam district	3	
Represented in Arracan by the Diamond I. gathering only	2	
Absent from the Pegu-Malaya district only	2	
[These sp. are both represented in Arracan by the Diamond I. gathering only.]		
Present only in Diamond Island (*Ellipanthus sterculiæfolius*)	1	
Total		95

The following remarks on this table may not be out of place. The absence at once from the Andamans and from Ceylon of certain species is at first sight good negative evidence of a statement made by Mr. Kurz (*l. c.* p. 15) concerning the Andamans;—"A few Ceylon species "indicate some relationship between the Andamans and that island." But it is unwise to believe that a thing does not exist because it has not been seen, and it is, as regards the Andamans at least, no evidence because these species have not yet been met with yet that they do not occur there. The positive evidence from the species that occurs in Ceylon and is very frequent all along the Andamans group (*Ipomœa denticulata*) but that nevertheless is absent from the western or Indian shore of the Sea of Bengal is also without value. The curious but constant feature as regards its habitat already remarked on, may explain its absence from the long line of sand-dunes that stretches from the Coromandel Coast up to Orissa. At the same time, it must not be supposed that Mr. Kurz's remark has been based on facts that are as easily explained as these are.*

In order to provide a basis for the computation of the relative value of the Arracan, Pegu, and Andaman influences in the composition of the Diamond Island flora, it is necessary to tabulate further the facts of distribution so far as these three districts alone are concerned.

* The writer has himself to add an instance quite as striking as any of those that were met with by Mr. Kurz. In November 1889 he collected on Mount Harriet in S. Andaman *Strongylodon ruber* Vogel, a Polynesian species that has a somewhat peculiar distribution in that it also occurs in Ceylon; to the Ceylon locality has now to be added that of S. Andaman also.

TABLE III. *Relationship of Transgangetic Distribution to Habit and Habitat.*

HABIT.					DISTRIBUTIONAL FEATURES.	HABITAT.								
Total.	Trees.	Shrubs.	Herbs.	Climbers.		Cultivated or planted.	Weeds.	Island sp.	Marsh sp.	Coast sp.	Epiphyte.	Saprophytes.	Marine.	Total.
70	16	16	25	13	In all 3 districts and widely distributed in the Arracan-Assam district	8	8	22	7	17	1	4	3	70
3	1	2	...	...	In all 3 districts but represented in Arracan by the Diamond I. gathering only ...	1	...	2	...	...	...	.		3
15	4	2	5	4	Absent from Andaman-Nicobars, but widely distributed in Arracan...	1	1	9	3	1	..	...	...	15
2	1	1	...	...	Absent from Andaman-Nicobars and only represented in Arracan by the Diamond I. gathering...		...	2	...	...	...	..		2
3	...	2	...	1	Absent from Pegu; and at the same time only known from Arracan by the Diamond I. gathering	...	...	1	...	2	...	...	...	3
1		...	...	1	Absent from Pegu and Andamans; widely distributed in Assam-Arracan... ...	...	...	1	.	...	...	...	...	1
1	1	...	...	...	Only known from Diamond Island ...	...	...	1	...	...	...	...	...	1
95	23	23	30	19	TOTALS	10	9	38	10	20	1	4	3	95

The first line of this table represents that element in the flora of the island wherein the influence of the three adjacent districts may be assumed to act indifferently; the second line that wherein the influence of the Arracan district is to be eliminated and only Pegu-Malayan and Andaman-Nicobar influences (presumably equally) prevail; the third line that wherein Pegu-Malayan and Arracan-Assam influences prevail, while Andaman-Nicobar influences do not act; the fourth contains the element representative of Pegu-Malayan influences alone; the fifth that representative of purely Andaman-Nicobars influences; the sixth that indicating purely Assam-Arracan influences; the last, like the first, indicates an element wherein the influences of the three areas act indifferently but in the opposite way. As however this element (the endemic) is here only represented by one species, it is not convenient or useful to employ it in computation, and since Diamond Island is geographically inseparable from Arracan this species is treated as indicative of Arracan influence.

Reasoning from particulars the Andaman influence is stronger than either the Pegu or the Arracan influence is, so far as positive evidence goes, for there are here *three* exclusively Andamanese species as

compared with only *two* exclusively Arracan and *two* exclusively Pegu species. The negative evidence, however, points quite the other way, for there are no fewer than *eighteen* species* indicating the *absence* of Andaman influence, as against only *five*† indicating the absence of Arracan influence, and *five*‡ indicating the absence of Pegu influence. But it has to be kept in mind that the Andaman flora is by no means so well-known as the floras of the other two districts are and this negative evidence may be expected to be decreased, while there is no reason why the positive evidence may not be increased. The figures are in every case too small for special inferences being drawn from them.

The comparative values of the influences of these three adjacent areas are more accurately determinable from general evidence. In applying this it is necessary to use in succession as numerators the figures yielded by each possible distributional arrangement in which *adjacent* areas are concerned and as denominators in each case the number of *adjacent* areas involved; by adding together the fractions affecting particular adjacent districts we obtain a number that indicates the proportional influence of each of them in the composition of the flora of the island. The following are the results:—

I.	Andaman-Nicobar influence	$\frac{70}{3}+\frac{3}{2}+\frac{3}{1}$	$=27\frac{5}{6}$,	or 29·29°/₀.
II.	Pegu-Malayan influence	$\frac{70}{3}+\frac{3}{2}+\frac{15}{2}+\frac{2}{1}$	$=34\frac{1}{3}$,	or 36·14°/₀.
III.	Assam-Arracan influence	$\frac{70}{3}+\frac{15}{2}+\frac{1}{1}+\frac{1}{1}$	$=32\frac{5}{6}$,	or 34·57°/₀.
			95.	100.

This method of computation may be extended to each of the subdivisions under the general headings 'habit' and habitat.' For some of these it is not, however, necessary; from others no particular information is to be derived. Under the heading of habitat, however, an analysis of the classes of inland and of coast plants is not without interest, especially when their results, expressed as per-centages, are compared with those afforded by the general total. They are as follows:—

INLAND SPECIES:—			
Andamans,	$=\frac{22}{3}+\frac{2}{2}+\frac{1}{1}$	$=9\frac{1}{3}$	or, 24·56°/₀.
Pegu,	$=\frac{22}{3}+\frac{2}{2}+\frac{9}{2}+\frac{2}{1}$	$=14\frac{5}{6}$	or, 39 03°/₀.
Arracan,	$=\frac{22}{3}+\frac{9}{2}+\frac{1}{1}+\frac{1}{1}$	$=13\frac{5}{6}$	or, 36·41°/₀.
		38.	100 00.

* Obtained by adding together the totals of lines 3, 4 and 7.

† Obtained by adding together the totals of lines 2 and 4.

‡ Obtained by adding together the totals of lines 5, 6 and 7.

COAST SPECIES :—

Andamans, $= \frac{17}{3} + \frac{2}{1} = \frac{34+12}{6} = \frac{46}{6} = 7\frac{2}{3}$ or, 38·34°/₀.

Pegu, $= \frac{17}{3} + \frac{1}{2} = \frac{34+3}{6} = \frac{37}{6} = 6\frac{1}{6}$ or, 30·83°/₀.

Arracan, $= \frac{17}{3} + \frac{1}{2} = \frac{34+3}{6} = \frac{37}{6} = 6\frac{1}{6}$ or, 30·83°/₀.

20. 100·00.

Comparing the results in these three series of figures we find the general influence differs from the special influence exhibited in the statistics of the inland and the coast element of the flora as follows :—

TABLE IV. *Comparison of Results.*

	Species in flora generally.	Inland species.	Coast species.
Andaman influence responsible for introduction of	29·29°/₀.	24·56°/₀.	38·34°/₀.
Pegu ,, ,, ,, ,,	36·14°/₀.	39·03°/₀.	30·83°/₀.
Arracan ,, ,, ,, ,,	34·57°/₀.	36·41°/₀.	30·83°/₀.

It will at once occur to the reader that a fallacy underlies this calculation so far as the Andaman influence is concerned, when he notes the low figure at which that influence as regards inland species is given. This low figure, however, only affords corroboration of the justness of the system, since it is exactly the inland portion of the Andaman flora that is as yet inadequately known. The Andaman coast species are, however, nearly if not quite as well known as the Burmese or Malayan coast species, and it is interesting to find that for this element the equivalent numerical expression of the Andaman influence is distinctly *higher* than are the figures for Pegu or Arracan. The only fallacy underlying the evidence from these figures is that which attends all calculations from numbers that are *absolutely* somewhat small. At all events they show how just was the passing observation made by Mr. Kurz on his visit to Diamond Island in 1866.* The only point on

* Already given in the text (p. 276) and referred to in footnote †.

which emphasis requires to be put in connection with the remark is that this striking "similarity, nay rather identity, of the shore vegetation" is due less, as Mr. Kurz appears to imply, to the general connection that subsists between the Andamans as a whole and Burma-Malaya as a whole than to a special connection that subsists between Diamond Island as the first segment, and the Andamans as the continuation of a special geographical district whereof both are *membra disjecta*—a connection quite as strikingly exhibited in these features wherein they together differ from Burma and Malaya as in the features wherein they alike agree with those two areas.

XIX.—Noviciæ Indicæ. III. *Some additional species of* Labiatæ.—*By* D. Prain.

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The account of the Indian Labiatæ in the *Flora of British India*, vol. iv, pp. 604—705 was published in August 1885, and since then a number of forms new to India, including a few new to science, have been reported from outlying portions of the Indian Empire. Having been directed by Dr. King to arrange the Indian material of the order preserved in the Calcutta herbarium, and having had at the same time the advantage of the use of the material of the order in the Saharanpur herbarium, kindly lent for study by Mr. Duthie, as well as of that in the private herbarium of Dr. Watt, kindly placed at my disposal by its owner, I have taken the opportunity to provide diagnoses of all the forms new to India arranged according to the method of the *Flora* and now present these to the Society in the hope that they may prove of interest to members who may be botanising in the field near the various Indian frontiers.

1. OCIMUM Linn.

6. Ocimum exsul *Coll. & Hemsl.*; stems erect simple hispid, leaves shortly petioled decussately paired, rather thick, hispidly hairy beneath, glabrous above, narrowly obovate-lanceolate obtuse remotely obscurely toothed paler beneath, lateral veins about 7 pairs oblique distinct; racemes long lax, bracts small subrotund coloured, whorls 4-6 flowered pedicels short, *calyx* hirsute campanulate, 2 lower teeth contiguous very shortly acuminate aristate, fruiting enlarged dry, rigid conspicuously nerved upper lobe orbicular slightly recurved; *corolla* blue puberulous tube slender lower lip slightly concave upper 4-fid, filaments naked far

exserted upper pair slightly thickened at the base; *nutlets* ovate-orbicular, pale, smooth.—Ocimum exsul *Coll. & Hemsl., Jour. Linn. Soc.* xxviii, 112 (1890).

Burma:—Meiktila, *Collett* n. 877.

Apparently perennial, stems more than 30 cm. high; leaves 2·5—3·5 cm. long, 0·75—1 cm. across, distinctly gland-dotted; racemes terminating in a few sterile coloured bracts, bracts 2·5 mm. diam., pedicels 1—4 mm., *calyx* 3 mm. long 2 mm. across (fruiting 8 mm. long 4·5 mm. across, lower teeth strongly aristate), *corolla* tube 8·5 mm. long, externally puberulous as are the lips, lower lip 3·5 mm. long; stamens 10 mm. long; *nutlets* 3 mm. diam.

A very interesting species unlike any Indian *Ocimum* and belonging to § Ocimodon (*Hiantia*); nearly related to the African *O. obovatum* and *O. filamentosum*.

7. ORTHOSIPHON Benth.

* * * *Calyx-throat naked, stamens far exserted.*

8 *b*. Orthosiphon Parishii *Prain*; slender, glabrous, stem short or long, leaves decussately paired, pairs 3, lowest usually smallest evanescent, middle pair largest, all long petioled, ovate-acute gradually tapering from widish truncate or cuneate base, margin distinctly serrate or sinuate or entire, upper surface sparsely hairy under surface glabrous except the nerves, racemes very long, bracts narrowly ovate-acuminate slightly exceeding pedicels, *calyx* hirsute campanulate 2 lower teeth subulate, *corolla* blue, tube very slender $3\frac{1}{2}$ times as long, lower lip narrow concave, upper 3-fid, margins glabrous, filaments naked, twice as long as corolla; *nutlets* broadly oblong, compressed, minutely reticulately rugulose.

Burma:—Tenasserim, *Parish*; Shan Hills Terai, 2000 feet, *Collett*; Meiktila, *Prazer*; Maymyo, *Dr. King's collector*.

Rootstock short nodular woody 1·5 cm. long 0·5 cm. thick, leafy stem 12—20 cm., internodes about 3 cm., petioles 2—5 cm. long; laminæ of middle pair 7—13 cm. long 5—6 cm. across, of other pairs 3—7 cm. long 2·5—4 cm. across, racemes 6—14 cm. long, whorls 6-fld. about 2·5 cm. apart, bracts 5 mm. long, 1·5 mm. wide, margin ciliate hirsute, pedicels 3 mm. long; *calyx* 4 mm. long (in fruit 7·5 mm. long); *corolla*-tube 15 mm. uniform externally puberulous as are the lips, lower lip 6 mm. long 2·5 mm. across, upper lip 3 mm. long 5 mm. across, filaments inserted below apex of tube 24 mm. long, stigma clavate sub-capitate slightly notched, *nutlets* 1·75 mm. long 1 mm. across.

Nearest to *Orthosiphon stamineus* Benth. of which it repeats all the characters of flower and fruit, but which has much smaller leaves and an

altogether different habit. In habit this approaches *O. scapiger* Benth. from Nepal and Kamaon, as does another plant from Manipur (*Watt* n. 7718) which has been collected without corollas or fruit; the *calyx* in Watt's plant is like that of *O. Parishii* but the bracts are rather longer (7 mm.) and the pedicels distinctly shorter (hardly 1 mm.) while the leaves are in 4 (not 3) pairs, are deeply cordate at the base, and have branches in the axils of the 3 lowest pairs.

8. PLECTRANTHUS L'Herit.

§ Isodon. (*F. B. I.* iv, 616).

* * * *Fruiting calyx indistinctly 2-lipped, shortly 5-toothed. Corolla* $\frac{1}{8}$—$\frac{1}{3}$ *in. long, tube straight equal at the base.*

11 *b.* Plectranthus Brandisii *Prain;* stems simple or branched ascending leafy puberulous, leaves petioled lanceolate serrate above the middle, puberulous beneath, subglabrous above, cymes panicled, *corolla*-tube short broad, lips subequal; fruiting *calyx* red-punctate scaberulous, 3 upper teeth acute, 2 lower broader triangular acute or sometimes obtuse; *nutlets* narrowly ovoid.

Burma; Pegu, *Brandis* n. 813; *Kurz* nn. 575, 2401, 2405, 2406, 2407.

Stems slender angles obtuse 50—80 cm. long, branches spreading sometimes 30 cm. long, petioles 2—4 cm. long, laminæ 5—12 cm. long, 1·5—2·5 cm. broad, membranous; panicles pyramidal branches slender, flowers white speckled with red, stamens far exserted. Flowers in January.

Leaves and habit of *P. Walkeri* and *P. Stracheyi* with inflorescence of *P. striatus* and a speckled calyx like that of *P. Stocksii* to which this bears the relationship that *P. Stracheyi* bears to *P. striatus.* It is referred to in *F. B. I.* iv, 618 under *P. Stracheyi* by Sir Joseph Hooker as a plant very like but probably distinct from that species; the specimens available being neither in flower nor with fruit could not be then described.

* * * * *Fruiting calyx longer than broad, 2-lipped or subequally 5-toothed. Corolla* $\frac{1}{6}$—$\frac{1}{3}$ *in. tube declinate or abruptly decurved (almost straight in* P. repens *and* P. Kurzii), *base usually gibbous.*

16 *b.* Plectranthus Kurzii *Prain;* stem simple ascending glabrous, leaves broadly orbicular obtuse, base cuneate entire narrowed gradually into the short petiole, above the middle few wide toothed, the terminal tooth always longest often very large and blunt, cymes in narrow racemes shorter than the stem, *corolla* tube nearly straight, cylindric, obtusely spurred at the base above, stamens included, fruiting *calyx* glabrous teeth subequal subacute, *nutlets* small broadly ovoid.

Sikkim; Ratong to Yoksum, 2500—5000 feet, *T. Anderson, Kurz.*

Stems 30—40 cm. rather bluntly 4-angled flaccid, leaves 4—4.5 cm. long and 4—5 cm. wide thinly membranous, narrowed gradually into a petiole 1—3 cm. long, serrations 3—7 on each side, central tooth 0·75—1·5 cm. wide, panicles solitary and terminal or few axillary, 6—10 cm. long, lax-fld.

Most resembles *P. excisus* Maxim. but is smaller in all its parts.

20 *b.* Plectranthus pharicus *Prain;* shrubby dwarf tomentose or puberulous, leaves small sessile or subsessile ovate or rounded crenate, cymes in distinctly peduncled rather dense few-fld axillary racemes, *corolla* tube short wide, lips very large, fruiting *calyx* narrow sub-2-lipped subhispid strongly nerved, teeth acute, *nutlets* oblong.

Eastern Himalaya: Phari, *King's collectors.* Distrib. S. Tibet.

Small shrubby, stems woody and rounded below, 4-angled above, 15—30 cm. high, leaves 1—1·25 cm. long under 1 cm. broad, glabrate above tomentose at least on the nerves beneath, peduncles 0·5—0·75 cm., *calyx* 4 mm. (in fruit 7 mm.) long, 2·5 mm. broad, 2 lower teeth $\frac{1}{2}$ longer than the 3 upper, tube contracted above nutlets in fruit, pedicels 2—3 mm., *corolla* 9 mm. long (tube 4 mm. long 2·5 mm. wide), lower lip 5 mm. long, *nutlets* pale faintly reticulated smooth, 2·5 mm. long 1·5 mm. broad.

A very distinct species, nearest to *P. melissoides* and *P. rugosus* between which it stands intermediate,

10.* HYPTIS Jacq.

1 *b.* Hyptis capitata *Jacq.;* erect, stem glabrate, leaves petioled ovate oblong incised serrate glabrate on both surfaces, peduncles longer than the globose heads, bracts ovate-lanceolate or linear, *calyx* glabrous, teeth erect subulate shorter than tube.—Hyptis capitata *Jacq., Ic. rar.* i, t. 114; *Benth., DC. Prodr.* xii, 106.

Lower Bengal; introduced; *Kurz, etc.* Distrib. Tropical America, introduced into Formosa, Philippines and India.

An erect often branching annual, leaves 8—10 cm. long 5—6 cm. wide, nerves beneath minutely puberulous; heads 20—25 mm. ($\frac{3}{4}$ in. or over) in diameter, enlarging in fruit, bracts reflexed and often hidden, corolla longer than calyx.

12. POGOSTEMON Desf.

5. Pogostemon purpurascens *Dalz.;* add to localities of *Flora of British India,* iv, 632.

Manipur; Kassome range, 3—4000 feet, *Watt* n. 5078.

After repeated examination I can find no character to separate the

Concan from the Manipur plant. This species therefore repeats the detached distribution exhibited by *Pogostemon paniculatus*, which occurs in Lower Burma and in the Western Deccan but apparently nowhere between. The principal difference between *P. purpurascens* and *P. parviflorus* consists in the former having longer calyx teeth and larger flowers than the latter.

24 *b*. Pogostemon Wattii *C. B. Clarke;* simple or branched, puberulous with reflexed hairs, leaves elliptic-ovate acuminate, dentate except the base, lamina decurrent on the long petiole, nerves densely elsewhere sparingly puberulous above, glabrous except the nerves beneath, spikes narrow terminal and axillary sparingly softly hairy, whorls close set or shortly interrupted, bracts minute linear, *calyx* distinctly pedicelled, tubular, hirsute externally on the nerves, teeth triangular the 2 lower slightly exceeding the 3 upper, *corolla* tube distinctly exserted, lobes puberulous, filaments sparingly puberulous, *nutlets* on a short gynophore.—Pogostemon Wattii *C. B. Clarke*, *Jour. Linn. Soc.* xxv, 59.

Manipur; Kassome range, 3—4000 feet; near Kongal Thana, 3500, *Watt* nn. 5079, 6613. Assam; Naga Hills, at Kohima, 4750, *Clarke*.

Stems 40—60 cm. rather slender terete, petioles 3—4 cm., laminæ 6—9 cm. long 3—5 cm. wide, spikes 6—11 cm. long under 1 cm. wide, pedicels 3 mm., *calyx* 5 mm. lower teeth 1 mm., *corolla* 7 mm. long tube annulate within (the annulus of star-like processes and incomplete behind where the style is lodged), stigma shortly 2-fid, *nutlets* 1 mm., gynophore 0·5 mm.

A very distinct species.

13. DYSOPHYLLA Blume.

* Calyx tube terete or obscurely angled.

† *Leaves opposite.*

3 *b*. Dysophylla Andersoni *Prain;* dwarf, stout, erect, stems and leaves on both surfaces adpressed pubescent, leaves sessile lanceolate or oblong-lanceolate acute quite entire, spikes short, stout, softly tomentose, *calyx* short glabrescent, teeth bluntly triangular half as long as tube.

Sikkim; Terai, *Dr. T. Anderson*.

Stems only 8—15 cm. branched, branches erect stoutish woody, leaves 3—4 cm. long, 1 cm. wide, spikes 15—20 mm. long 10 mm. wide, sessile, whorls confluent, *calyx* in fruit 2 mm. long teeth erect, teeth hirsute, tube glabrous externally, *corolla* tube included, lobes sparingly hairy, *nutlets* globose, smooth, shining, red-brown *not* trigonous.

Allied to *D. rugosa* and to *D. salicifolia* but very distinct from both.

4 *b*. Dysophylla communis *Coll. & Hemsl.*; annual, puberulous, leaves large, membranous, oblong, obtuse, narrowed at the base into a long winged petiole, margin widely crenate, sparsely hirsute with flaccid white hairs on both surfaces, spikes 1—3½ in., *calyx* cylindric, puberulous, equally 5-toothed, *corolla* tube not exceeding calyx.—Dysophylla communis *Coll. & Hemsl., Jour. Linn. Soc.* xxviii, 114 (1890).

Burma:—Shan hills at 4000 feet, very common.

Sparingly branching, branches 4-angled, internodes usually shorter than the leaves; leaves as much as 3½ in. long, paler beneath, the lateral nerves (about 4 pairs) prominent, flowers rose-pink subsessile and aggregated in dense spikes, *corolla* 1½—2 lines long, externally pilose; filaments shortly exserted, *glabrous*. *Nutlets* not seen.

"This approaches *D. auricularia* Blume, which is easily distin-"guished by the thicker substance of the leaves and by being densely "villous all over" (*Hemsley* l. c.).

There is no example of this plant at Calcutta. It differs from all other species of *Dysophylla* in having naked filaments. The description is taken from the paper by General Collett and Mr. Hemsley on plants from Upper Burma and the Shan hills collected by General Collett.

† †. *Leaves in whorls of three or four* (*rarely more*).

9 *b*. Dysophylla peguana *Prain*; slender, erect, simple or branched, uniformly adpressed puberulous, leaves 4 in a whorl sessile linear entire, spikes elongate, uninterrupted, tomentose, teeth of fruiting calyx erect.—Dysophylla verticillata *Benth.* var. ? gracilis *Benth., DC. Prodr.*, xii, 158.

Pegu; *Maclelland, R. Scott* n. 354, *Kurz* nn. 2401, 2405; Moulmein, *Griffith*.

Stems 30—40 cm. high, slender, as thick as a crowquill, branches erect, leaves 2·5—3 cm. long, 0·25 cm. wide not deflexed, spikes 3·5—5 cm. long, 0·5 cm. wide, never interrupted, *corolla* tube very short, filaments far exserted, *calyx* densely hirsute externally, teeth in fruit erect, *nutlets* narrowly ovate, pale, shining.

Most like *D. verticillata* but very distinct owing to its adpressed hairy stem, its calyx more densely hirsute with teeth erect and not stellate patent in fruit, and its shining nutlets which are paler in colour rather longer and much narrower. One of the most distinct species of the genus.

15. ELSHOLTZIA Willd.

7. Elsholtzia Griffithii *Hook. f.* var. typica; add to localities of *Flora of British India*, iv, 644.

Upper Burma; Maymyo, 4000, *King's collector*.

var. sacra *Prain*; glabrate, leaves petioled or sessile, linear, spikes

rather long terete dense-fld., *calyx* in flower narrow teeth triangular subequal.

Upper Burma; Shan Hills at Toungyi, 5000 feet, *Collett*, n. 57; Maymyo, 4000—4500, *King's collector*.

Stems 30—80 cm., round, rigid, dark brown, leaves 3—5 cm. long lower petioled upper sessile, 0·25—0·35 cm. wide, coarsely serrate throughout, lower petioles 0·5—1 cm. long, spikes 5—6 cm. long, 1·25 cm. wide, bracts setaceous not exceeding calyx, *calyx* pubescent, *corolla* tube ½ longer than calyx, lobes puberulous.

A very distinct variety. Bundles of this are sold and used by Shans as votive offerings at pagodas.

21 *b*. ZATARIA Boiss.

Undershrubs with small orbicular leaves shortly petioled distinctly glandular punctulate, whorls axillary sessile or in pedunculate cymes and paniculate towards the ends of the branches, flowers very small. *Calyx* 5-nerved ovate equally 5-toothed, teeth erect, mouth hirsute. *Corolla* tube sub-included, limb 2-lipped upper entire lower 3-lobed. *Stamens* 4 included lower slightly longer, anther-cells distinct parallel, at length diverging. *Style* shortly 2-fid upper lobe slightly shorter. *Nutlets* smooth.—Species 2, Oriental.

1. Zataria multiflora *Boiss;* much branched, branches slender white puberulous, leaves puberulous, whorls dense, axillary, sessile, bracts oblong equalling calyx, bracteoles shorter than calyx, *calyx* teeth much shorter than tube, *corolla* upper lip equalling the lateral lobes of lower lip, ovary subsessile.—Zataria multiflora *Boiss., Diagn.* ser. 1, v, 18; *Benth., DC. Prodr.* xii, 183; *Boiss., Flor. Orient.* iv, 561; *Hook., Ic. Pl.* xv, t. 1428.

Beluchistan:—Assigned districts, Quetta, *Lace*, n. 3936. Distrib. Persia.

Diffusely branching, leaves 0·75—1 cm. long 0·5 cm. wide, *calyx* 2·5 mm., teeth 0·5 mm., *corolla* 4 mm., long.

2. Zataria bracteata *Boiss;* much branched, branches slender brown glabrous, leaves glabrous, whorls peduncled spicate, spikes paniculate, bracts ovate acute longer than flowers, bracteoles linear as long as calyx, *calyx* teeth slightly shorter than tube, *corolla* upper lip much shorter than lateral lobes of lower lip, ovary shortly but distinctly stalked. Zataria bracteata *Boiss., Diagn.* ser. 2, iv, 12.—Z. multiflora *Benth. in Gen. Plant.* ii, 1186.—Z. multiflora var. elatior *Boiss., Flor. Orient.* iv, 562.

Gilgit; *Giles*. Distrib. Afghanistan.

Rigidly branching leaves 1—1·5 cm. long, 0·75—1 cm. wide, *calyx* 2·25 mm. teeth 0·75 mm., *corolla* 4 mm. long.

28. SALVIA Linn.

[*Salvia coccinea* Linn. is not infrequently found as an escape from cultivation in the Nilghiri hills, Sikkim etc. *S. utilis* Braun, and *S. verbenaca* Linn. also occur as escapes in the Nilghiris.]

§ Eusphace *Benth.* Shrubs or herbs, leaves entire or pinnatisect floral small or not, upper calyx lip very shortly 3-toothed, corolla tube subexserted annulate within, upper lip erect emarginate, connectives with an imperfect cell behind.

1.* Salvia cabulica *Benth.*; a branching shrub, leaves long-petioled small, softy villous, cordate ovate-orbicular, crenate, rugulose, floral small oblong lanceolate, whorls 2—4-flowered few, subterminal, *calyx* pedicelled campanulate 2-lipped, upper lip shortly 3-toothed lower 2-fid teeth all mucronate, *corolla* $2\frac{1}{2}$ times as long as calyx.—Salvia cabulica *Benth., DC. Prodr.* xii, 268; *Boiss., Flor. Orient.* iv, 594.

Panjab Frontier; Suleiman hills *Stewart, Duke, Hamilton.* Distrib. Beluchistan, Afghanistan.

Stems 60—100 cm. bushy, old branches with white flaking bark, young branches short slender rigid, petioles 0·5—1 5 cm., laminæ 1—2 cm. long 1—1·5 cm. wide, pedicels 5 mm., *calyx* 11 mm., *corolla* 15 mm. (tube 11 mm. lips 4—5 mm.), *nutlets* 4 mm. suborbicular, often one or more abortive, testa mucilaginous when boiled.

A very distinct species, obtained by nearly every one who has collected within or beyond the N.-W. Frontier.

§ § Hymenosphace *Benth.* Shrubs, rarely herbs, leaves entire or pinnatisect floral smaller, upper calyx-lip entire or shortly 3-toothed, corolla tube exserted or not, annulate within, upper lip suberect or falcate hardly compressed, connective with an imperfect cell behind.

1. * * Salvia hydrangea *DC.*; woody below, adpressed hoary, branches erect simple white, leaves petioled pinnatisect, segments 3—4-paired oblong obtuse entire pubescent or hirsute on both surfaces, lateral lanceolate-oblong or linear, terminal elliptic oblong larger, floral leaves sessile lower pinnatisect longer than flowers, upper ovate entire shorter than flowers coloured deciduous, whorls 6—10-flowered distant, flowers shortly pedicelled, *calyx* very large rose pink thinly membranous glabrous except the distinct sparingly hirsute nerves, lips large, upper broad blunt sinuate emarginate, lower 2-fid lobes ovate subacute, *corolla* tube slightly exserted.—Salvia hydrangea *DC. mss. in Benth., Lab. Gen. & Sp.* 717 and *Prodr.* xii, 271; *Boiss., Flor. Orient.* iv, 606.

Panjab Frontier; Suleiman range; *Duke, Rind, etc.*; common, like the preceding, all along and beyond the N. W. Frontier.

Stems 60—100 cm., leaves 6—8 cm., petioles 0·5—1 cm., terminal

leaflet 3—4 cm. long 2 cm. across, lateral 1·5—2 cm. long 1 cm. across, *calyx* 20 mm. long, (tube 10 mm. long upper lip 20 mm wide, lobes of lower lip each 12 mm.), *corolla* 25 mm. (tube 20 mm. lips 5—6 mm.), *nutlets* smooth subglobose 4 mm. long.

A handsome species with a striking appearance on account of its large, delicate rose-pink calyces. The Panjab plant connects true *S. hydrangea* with *S. Sheilei* Boiss.

§ § § § ÆTHIOPIS *Benth.* (Sect. 2; *F. B. I.* iv, 654).

5 *b.* SALVIA MACROSIPHON *Boiss.*, tall, slender, hirsute, leaves petioled rugose densely hirsute above and beneath oblong obtuse base rounded margin subentire, floral submembranous ovate long-acuminate shorter than calyx, whorls 2—4-flowered distant, *calyx* long tubular, teeth straight lanceolate acute, *corolla* white $1\frac{1}{2}$ times as long as calyx, tube exserted, upper lip suberect.—Salvia macrosiphon *Boiss., Diagn.*, ser. 1, v, 11 (1844); *Benth., DC. Prodr.* xii, 282 (1848); *Boiss., Flor. Orient.* iv, 615 (1879).—Salvia macrosiphon VAR. cabulica *Benth., DC. Prodr.*, xii, 282 (1848).—Salvia macrosiphon VAR. Kotschyi *Boiss., Flor. Orient.*, iv, 615 (1879).—Salvia Kotschyi *Boiss., Diagn.*, ser. 1, vii, 46 (1846).

PANJAB FRONTIER; Beluchistan, assigned districts, *Pitman, Duke;* Suleiman range, *Saunders.* DISTRIB. Beluchistan, Afghanistan, Persia.

Stem 40—60 cm., petioles 3—5 cm., leaves 4—8 cm. long 2—5 cm. wide, *calyx* 20—25 mm. long 7 mm. wide, *corolla* 25—30 mm., *nutlets* orbicular ovate subcompressed, pale green, shining and marbled with dark reticulations.

[*Salvia spinosa* Linn. and *Salvia Sclarea* Linn. have been repeatedly collected just beyond the N.-W. Frontier but not as yet within British territory.]

28 *b.* ZIZIPHORA BENTH.

Dwarf annual herbs or spreading perennial small shrubs with rigid stems, often hoary-tomentose, with small entire or slightly toothed leaves, floral like cauline or shorter and broader, whorls few-flowered axillary often crowded towards the apex of the stem, flowers subsessile or shortly pedicelled, bracteoles very small, *calyx* tubular elongated 13-nerved 2-lipped (upper 3- lower 2-toothed), throat villous, teeth in fruit subconnivent, *corolla* small, tube hardly exserted glabrous within somewhat dilated upwards, upper lip erect entire, lower spreading 3-fid, mid-lobe emarginate; *stamens*, 2 perfect (anterior), ascending under upper lip or subexserted, anthers linear perfect or with the lower cell empty, upper staminodes small or 0, disc uniform, *style* 2-fid lower lobe longer, *nutlets* ovoid, smooth.—Species about 12; Cent. Asian, Oriental, Mediterranean.

* Perennial.

1. ZIZIPHORA CLINOPODIOIDES *M. Bieb.;* shrubby, branching from the base, leaves glabrous or pubescent, ovate oblong or lanceolate, floral similar smaller shorter than the flowers, whorls capitulate, *calyx* narrowly cylindric, teeth very short linear lanceolate blunt upper rather longer, *corolla* tube shortly exserted, anthers-cells equal.—Ziziphora clinopodioides *M. Bieb., Flor. Taur.-Cauc.*, i, 17; *Benth., DC. Prodr.* xii, 364; *Boiss., Flor. Orient.*, iv, 585.

Rootstock stout woody, stems or branches usually numerous 6—15 cm. high, often fastigiate, leaves 0·5—0·75 cm. long 0·25—0·35 cm. wide, capitula 1·5 cm. long 2 cm. across, *calyx* 8 mm. long 2 mm. wide, *corolla* 11 mm. long.

The typical form of this variable plant does not occur within Indian limits, the following varieties are reported:—

α. VAR. *Benthami;* calyx pilose with white spreading hairs.—Ziziphora clinopodioides VAR. canescens *Boiss., Flor. Orient.*, iv, 585 (1879) [*not* Z. clinopodioides VAR. canescens *Benth., Lab. Gen. et Sp.* 321 (1833) and *DC. Prodr.* xii, 365 (1848)].—Z. canescens *Benth., Lab. Gen. et Sp.* 621 (1833) and *DC. Prodr.* xii, 365 (1848); *Aitch. & Hemsl., Trans. Linn. Soc.*, n. s. iii, 96 (1888).

N. W. HIMALAYA; Gilgit, *Giles.* DISTRIB. Soongaria, North Persia, Kurdistan, Armenia.

After close examination it seems impossible to deal with this plant otherwise than as M. Boissier has dealt with it. As regards floral structure it in no way differs from typical *Z. clinopodioides.* M. Boissier's varietal name is, however, preoccupied; it was employed by Mr. Bentham 46 years previously to designate precisely the plant termed by M. Boissier, *loc. cit., Z. clinopodioides* VAR. *serpyllacea.*

β. VAR. *rigida;* calyx hirsute with adpressed hairs or almost glabrous.—Ziziphora clinopodioides VAR. rigida *Boiss., Flor. Orient.*, iv, 586 (1879).

PANJAB FRONTIER; Beluchistan, assigned districts, *Lace.* DISTRIB. Beluchistan, Afghanistan, Persia, Armenia. Leaves usually much smaller and stems more rigid than in the other varieties.

* * Annual.

2. ZIZIPHORA TENUIOR *Linn.;* herbaceous, simple or branching from the base, leaves distinctly nerved scabrid ciliate narrowly lanceolate acute, floral similar longer than the flowers, whorls axillary along the stem in lax or dense oblong spikes, *calyx* narrowly cylindric, teeth very short triangular-ovate blunt, *corolla* tube shortly exserted, lower anther-cell small empty.—Ziziphora tenuior *Linn., Sp. Pl.* 21; *Benth., Lab. Gen. et Sp.* 322 and *DC. Prodr.* xii, 366; *Boiss., Flor. Orient.* iv,

587; *Aitch. & Hemsl., Trans. Linn. Soc.*, n. s. iii, 96.—Z. persica *Bunge, Lab. Pers.* 39 (*fide Boiss.*).—Faldermannia parviflora *Trautv., Bull. Ac. Imp. Petersb.* vii, 21.

Panjab Frontier; Suleiman range, *Duke.* Distrib. Beluchistan, Afghanistan, Persia, Asia Minor, Turkestan, Soongaria.

Root slender, stems 10—15 cm. high, leaves 1·5—2·5 cm. long 0·25—0·5 cm. wide, whorls often in spikes the whole length of the stem, 1·5—2 cm. wide, *calyx* 8 mm. long 2 mm. wide, *corolla* 11 mm. long.

29. NEPETA Linn.

A. Whorls in simple terminal oblong or cylindric spikes, which are rarely interrupted at the base. (*F. B. I.*, iv, 657.)

* * *Leaves entire or crenate sessile or subsessile.*

6 *b.* Nepeta podostachys *Benth.*; stem tall subsimple glabrescent, rootstock elongated prostrate, leaves small sessile linear-lanceolate acute, base narrowed entire margin elsewhere coarsely serrate, spikes narrowed sometimes interrupted at the base, bracts linear-lanceolate mucronulate, *calyx* sessile, teeth very slender sparingly ciliate.—Nepeta podostachys *Benth., DC. Prodr.* xii, 372; *Boiss., Flor. Orient.* iv, 639.

Western Temperate Himalaya; Gilgit, at Ghizeh, 10,000 feet, in irrigated soil, *Giles.* Distrib. Afghanistan (*Griffith* n. 4000).

Stems 40—60 cm., rootstock 8—10 cm. slender, leaves 1—2 cm. long under 0·5 cm. wide, spikes 5—8 cm. long 1·5 cm. wide, bracts 5 mm. long, *calyx* 8 mm. long, tube 4·5 mm., teeth 3·5 mm., *corolla* 12 mm. long.

Nearly related to *N. campestris, nervosa* and *eriostachya* but well distinguished by its smaller leaves and narrower bracts. It bears to *N. nervosa* something of the relationship that *N. campestris* bears to *N. eriostachya.*

8. Nepeta cœrulescens *Maxim., Mel. Biol.* xi, 306 (1881); *Forbes & Hemsl., Jour. Linn. Soc.* xxvi, 289 (1890).—N. Thomsoni *Benth. mss.* ex *Hook. f., Flor. Brit. Ind.* iv, 658 (1885).—Distrib. Lhassa (*Herb. Calcutta*); Kansu.

D. Whorls in branched panicles some or all more or less peduncled. (*F. B. I.* iv, 661.)

* *Corolla less than* $\frac{1}{2}$ *in. long.*

25 *b.* Nepeta glomerulosa *Boiss.*; erect branched from the woody base, branches slender hoary tomentose simple or again branching, leaves small ovate, crenate, linear-rugose, shortly petioled below, sessile above, whorls small few-flowered lower pedunculate distant upper sessile in interrupted narrow spikes, bracts membranous ovate acute entire, equalling sessile hirsute *calyx* with oblique mouth and lanceolate teeth shorter than the tube, *corolla* $\frac{1}{3}$ longer than calyx, *nutlets* minutely tuberculated.

—Nepeta glomerulosa *Boiss., Diagn.*, ser. 1, v, 21; *Benth., DC. Prodr.*, xii 379; *Boiss., Flor. Orient.*, iv, 651.—N. juncea *Benth., DC. Prodr*, xii, 379; *Boiss., Flor. Orient.*, iv, 651.—N. glomerata *Herb. Ind. Or., nec Mont. et Auch.*

Panjab frontier; Suleiman range *Stewart, Duke.* Distrib. Beluchistan, Afghanistan, and Persia.

Stems 20—50 cm., petioles 0·5—1·5 cm., laminæ 0·75—2 cm. long 0·5—1 cm. wide, lower peduncles 4—7 mm., bracts 3·5—4·5 mm. long, 2 mm. wide, *calyx* 5 mm. long, *corolla* 7 mm. long, *nutlets* 2 mm. long.

There are no very good characters whereby *Nepeta juncea* (the Panjab Frontier, Afghan and Beluch plant) can be separated from *Nepeta glomerulosa* proper (the Persian plant)—the secondary branches are more numerous, the leaves and bracts are rather smaller and the calyx teeth somewhat shorter in the more eastern form but the corollas and nutlets of the two are quite indistinguishable.

26 *b.* Nepeta lagopsis *Benth.*; softy hirsute with spreading white hairs, much branched, branches slender, erect or prostrate, short or long, leaves small, short-petioled, ovate, obtuse, coarsely blunt-toothed, whorls dense softly hairy distant axillary subsessile or on peduncles as long as the flowers, bracts subulate as long as the calyces, *calyx* teeth subulate almost as long as the tube, *corolla* hardly exserted.—Nepeta lagopsis *Benth., DC. Prodr.*, xii, 397; *Boiss., Flor. Orient.*, iv, 640.

Western Panjab; on Sheik Budeen, *Stewart, Saunders.* Distrib. Afghanistan (*Griffith* n. 494).

Branches 10—40 cm., leaves 1—1·5 cm. diam., petioles 0·5—0·75 cm., pedicels 2—7 mm. long, *calyx* 5 mm. long, bracts 5—6 mm., *corolla* 8 mm.

Nearly related to the Persian *N. prostrata.*

* * *Corolla more than* ½ *inch long.*

31 *b.* Nepeta Hemsleyana *Oliv. mss.* ex *Hemsl. in litt.*; tall erect branched finely pubescent, leaves sessile narrowly ovate-lanceolate entire whorls 8—12-flowered distant axillary peduncled, *calyx* nerves hirsute teeth obtuse, triangular shorter than tube, *corolla* twice as long as calyx gradually expanded to wide limb, *filaments* prolonged beyond anthers, anther-cells at length confluent, *nutlets* narrowly ovate.

Eastern Himalaya; S. E. Tibet beyond Phari, *Lama Ujyen Gyatsko* n. 93.

Stems 60—80 cm., branches 8—15 cm., leaves 2—3 cm. long 0·5—0·75 cm. wide, lower peduncles 4—5 mm., *calyx* 12 mm. long 3·5 mm. wide, *corolla* 25 mm. long limb 8 mm. wide, hirsute externally, *nutlets* 2 mm. long.

Characters of *Nepeta* (§ *Macronepeta*) but the stamens with filaments prolonged beyond the anthers as in *Hypogomphia*, and the anther-cells

at length confluent 1-locular. This plant I had therefore at first thought might have to be generically separated from *Nepeta*, but Professor Oliver who has very kindly examined specimens at Mr. Hemsley's request finds this is unnecessary; the character of prolonged filaments occurs in other species of the genus.

E. Dwarf species; leaves crowded, cymes or whorls axillary, floral leaves as large as the cauline and close-set (GLECHOMA *L.*).

32 *b*. NEPETA PHARICA *Prain;* erect, sublanate, leaves sessile orbicular rugose crenate, cymes all axillary few-flowered shorter than the leaves, *calyx* softly tomentose sub-2-fid upper lip longer and with broader less deeply divided teeth than lower, tube villous within, *stamens* included or upper pair subexserted, *nutlets* linear oblong smooth.

EASTERN TIBET; Phari, *King's collector;* between Phari and Lhassa, *Lama Ujyen Gyatsko* n. 106.

Rootstock creeping, stems 4—10 cm., leaves 1·5—2 cm. across, very close set, base crenate, cymes sessile, bracts minute, *calyx* 9 mm. long, *corolla* 16 mm., tube straight slightly dilated at throat, *nutlets* 2·75 mm. long.

F. Annuals; calyx-mouth straight.

34. NEPETA BRACTEATA *Benth.;* dwarf, stem very slender branching from the base, branches spreading subrigid, leaves petioled oblong or rhomboid distant toothed apex acute base cuneate, floral leaves sessile surrounding and generally exceeding the dense heads, bracts numerous oblong or ovate longer than flowers, submucronate, prominently nerved with margins entire, whorls condensed in ovate heads, *calyx* teeth straight subulate ciliate half as long as tube, *corolla* tube included, *nutlets* oblong shining smooth.—Nepeta bracteata *Benth.*, *DC. Prodr.* xii, 395; *Boiss., Flor. Orient*, iv, 667.—Zataria humilis *Benth.*, *DC. Prodr.*, xii, 183.

BELUCHISTAN; assigned districts at Shelabagh, 6,000 feet, *Lace* n. 3331. DISTRIB. Persia.

Stems 5—15 cm., leaves 1·5—2 cm. long 1 cm. wide, floral leaves 1 cm. long, 0·35 cm. wide, bracts 8 mm. long, *calyx* 6·5 mm. long, *corolla* 8 mm. long, *nutlets* 2·5 mm.

30. DRACOCEPHALUM LINN.

4. DRACOCEPHALUM HETEROPHYLLUM *Benth.;* add to localities of *Flora of British India*, iv, 666.

EASTERN TIBET; Phari 11-14000 feet, *Dr. King's collectors;* Karoola, near Lhassa, *Dr. King's collector.*

7. DRACOCEPHALUM TANGUTICUM *Maxim., Mel. Biol.*, xi, 307 (1881). —D. Hookeri *C. B. Clarke in Hook. f., Flor. Brit. Ind.*, iv, 606 (1885).

EASTERN HIMALAYA; Phari, frequent, *Dr. King's collectors;* East Tibet, common, *Lama Ujyen Gyatsko.* DISTRIB. W. Kansu.

32. SCUTELLARIA LINN.

§ Flowers not secund.

* *Flowers in short leafy terminal spikes that are 4-angled in bud, bracts leafy.*

2 *b.* SCUTELLARIA STOCKSII *Boiss.;* dwarf, softly hirsute, woody at the base, much branched, old branches prostrate, young ascending, leaves small elliptic-oblong, shortly petioled, apex acute.base cuneate margin entire, spikes few-flowered subcapitate, *corolla* pubescent much longer than calyx.—S. Stocksii *Boiss., Diagn.* ser. 2, iv, 28; *Flor. Orient.*, iv, 684.

PANJAB FRONTIER; assigned districts of Beluchistan at Pil Rift near Quetta, *Lace* n. 3881. DISTRIB. Beluchistan (Chehen Tun, *Stocks*).

Habit of *S. prostrata* and *S. Heydei* but more compact and with shorter branches and fewer-flowered heads. Leaves 1 cm. long 0·75 cm. wide, bracts similar but smaller, heads few-fld almost hidden by the leaves, *corolla* 18 mm. long.

A very distinct species.

* * *Flowers more or less laxly racemose.*

2 *c.* SCUTELLARIA MULTICAULIS *Boiss.;* much branched from a woody base, branches erect virgate simple slender shortly puberulous, leaves small hoary-tomentose and subglandular beneath, distinctly petioled, apex acute, base cuneate or subtruncate, margin bluntly or deeply few-toothed, flowers few distant opposite, bracts small ovate entire hardly exceeding calyx, *corolla* puberulous much longer than calyx.—Scutellaria multicaulis *Boiss., Diagn.* ser. 1, vii, 61; and *Flor. Orient.*, iv, 685; *Benth., DC. Prodr.*, xii, 414.—S. nepetæfolia *Benth., DC. Prodr.*, xii, 414.

GILGIT; Hindu Kush, *Giles.* DISTRIB. Afghanistan, Persia.

Branches 20—25 cm. long, petioles 0·5 cm. long, laminæ 1 cm. long 0·75 cm. wide, bracts 3·5 mm. long, *calyx* 3 mm. long, *corolla* 25 mm. long, yellowish with purple patches.

§ § Flowers opposite racemose secund.

* * * *Flowers in long narrow racemes, bracts shorter than the pedicel and calyx.*

4 *b.* SCUTELLARIA ANDAMANICA *Prain;* quite glabrous, stems many from a woody rootstock with clustered rootlets, erect, simple or branched, rigid, leaves long petioled oblong-lanceolate obtuse crenate-dentate except tapering cuneate base, flowers opposite or in whorls of 3 except the upper, *corolla* blue with centre of lip white, *nutlets* pale brown scabrid.

SOUTH ANDAMAN; Rungachang, in stream bed, 25 feet above sea-level, *Prain.*

Stems woody below and subterete, 4-angled above and grooved, 20—25 cm. high, leaves few, petioles 3—4 cm. almost equalling laminæ 4—4·5 cm. long and 1—1·5 cm. across, crenatures 7—8 on each side absent from basal $\frac{1}{4}$ or $\frac{1}{3}$, racemes 8—10 cm., bracts 3 mm. long equalling pedicels, calyx 3 mm., corolla 16 mm., nutlets 1 mm.

Nearly allied to *S. discolor* Colebr. of which it has all the characters of corolla and has also, near the top of the spike, the scattered flowers; it bears to that species the relationship that *S. oblonga* Benth. bears to *S. violacea* Heyne. Flowers November to January. As to foliage it most nearly approaches *S. oblonga*, with which species Mr. Hemsley, who has kindly examined it, suggests its union. That species however, besides differing in having all the flowers opposite, occurs at 5000 feet elev. and flowers in April.

* * * * *Flowers in long narrow racemes, bracts longer than the pedicels and calyx but hardly leafy.*

7 *b*. Scutellaria petiolata *Hemsl. & Lace;* glabrous, stems slender tufted from thick woody rhizome, leaves petioled ovate acute, base truncate entire, sides each with 2—3 crenations, anterior third entire, bracts ovate entire petioled only the lowest exceeding the calyx, pedicels short, *corolla* tube 5 times exceeding calyx, upper lip notched, *nutlets* granulate.—Scutellaria petiolata *Hemsl. & Lace, Jour. Linn. Soc. ined.*

Beluchistan; assigned districts, *Mr. Duthie's collectors.* Distrib. S. Afghanistan at Ziarat. (*Lace* 4006).

Rootstock 1 cm. thick, stems 13—25 cm. long round hardly as thick as crow quills, petioles 0·75—3 cm. long, laminæ 2—3 cm. long 1·5—2 cm. across, crenations shallow, both surfaces quite glabrous, bracts 8 mm. long 3 mm. across, pedicels 2 mm., *calyx* 4 mm. long 3 mm. wide, *corolla* tube 22 mm. long, limbus 5 mm. across upper lip 4 mm. long lower 6 mm., *nutlets* elliptic 2 mm. long.—Dries pale reddish brown.

10. Scutellaria scandens *Don, Prodr. Flor. Nepal.* 110 (1825); *Benth., Lab. Gen. et Sp.* 444 (1834).—S. angulosa *Benth. in Wall. Cat.*, 2139 (1828), *Pl. As. Par.* i, 67, (1830), *DC. Prodr.* xii, 430 (1848); *Hook. f., Flor. Brit. Ind.*, iv, 669 (1885).—S. celtidifolia *A. Ham., Monogr. Scutell.*, 27 (1832).

* * * * * *Flowers all axillary.*

15. Scutellaria kingiana *Prain;* stems puberulous decumbent slender several from creeping slender rootstock, leaves pubescent petioled ovate orbicular obtuse crenate except the rounded base, flowers axillary pedicelled few, pedicels short, *calyx* puberulous, *corolla* large white.

Eastern Himalaya:—Kang-ma, 60 miles north of Phari and on the banks of the Pe-na-mong Chu. *Dr. King's collector.*

Stems 15—18 cm. long, petioles 5—6 mm., laminæ 18 mm. long by 14 mm. wide, crenatures few wide (11—15), *calyx* 4 mm. by 3 mm. at mouth, *corolla* puberulous 30 mm., long (tube 22 mm. long limbus 5 mm. diam.), filaments glabrous; nutlets not seen.—A very distinct species only once reported; flowers in August.

34 *a.* CHAMÆSPHACOS Schrenk.

Annual dwarf erect branching herbs. *Leaves* shortly petioled; whorls 2-flowered. *Calyx* campanulate subequally 5-toothed, 10-nerved with ring of hairs at limbus within, subinflated in fruit, *corolla* tube exserted or included, throat hardly widened, upper lip erect emarginate, lower spreading 3-lobed. *Stamens* exserted or sub-included, anther-cells confluent, oblong. *Style* subequally 2-fid. *Nutlets* oblong narrowed.—Species 4, Western and Eastern Turkestan, Afghanistan, Persia, Beluchistan.

§ Euchamæsphacos; stamens exserted, calyx teeth setaceous, nutlets apiculate above. [Chamaesphacos *Schrenk, Enum. Pl. Nov.* i, 27.]

§ § Tapeinanthus; stamens sub-included, calyx teeth herbaceous, nutlets rounded above. [Tapeinanthus *Boiss. mss. apud Benth. in DC. Prodr.* xii, 436.]

1. Chamæsphacos brahuicus *Aitch. & Hemsl.;* densely villous, usually much branched from the base, branches erect, leaves entire, lanceolate, acuminate or acute, narrowed into a short petiole, flowers axillary, shortly pedicelled, *calyx* externally densely villous with spreading hairs, teeth triangular, lanceolate, subulate acuminate, shorter than the tube, *corolla* pink, tube slightly exserted.—Chamæsphacos brahuicus *Aitch. & Hemsl., Trans. Linn. Soc.* n. s. iii, 97.—Tapeinanthus brahuicus *Boiss., Diagn.* ser. 2, iv, 29 and *Flor. Orient.* iv, 680.

Panjab Frontier; Suleiman range, *Duke.* Peshin valley, *Lace.* Distrib Beluchistan, Khorasan.

Stems 6—9 cm. high, leaves 2·5—3 cm. long, 1·25—1·5 cm. wide, *calyx* 8 mm. long, 3·5 mm. wide (in fruit 5· mm. wide), *corolla* 10 mm. long, *nutlets* 3·5 mm. long.

35 *a.* MICROTŒNA Prain.

Perennial erect branching herbs. *Leaves* long petioled; *cymes* paniculate or thyrsoid. *Calyx* ovoid, fruiting globose, equally 5-toothed, 12-nerved; throat constricted glabrous within. *Corolla*, upper lip large galeate concave entire, lower spreading 3-fid mid-lobe smaller than lateral. *Stamens* ascending under the upper lip; anther-cells divaricate when young, at length confluent explanate. *Style* bifid, upper lobe very

short. *Nutlets* very minute, apices ovate subtriquetrous, below smooth. —Species 4, S. Chinese and Indo-Chinese.

1. MICROTŒNA CYMOSA *Prain;* minutely tomentose, leaves widely ovate-acute base subcordate margin crenate-dentate, cymes rather lax, *calyx* teeth triangular, *galea* throat below 2-auriculate rather longer than tube, lateral lobes of lip ovate-rotund thrice exceeding central narrowly elliptic, *nutlets* very minute.—Microtœna cymosa *Prain in Hook., Icon. Plant.* xix, t. 1872.—Microtæna cymosa *Forbes & Hemsl., Jour. Linn. Soc.* xxvi, 306 and xxviii, 116.—Gomphostemma insuave *Hance, Jour. of Botany*, 1884, p. 231.—Plectranthus Patchouli *Clarke in Hook. f., Flor. Brit. Ind.* iv, 624 and *Jour. Linn. Soc.* xxv, 58.

ASSAM: Naga Hills, *Jenkins;* Manipur, *Clarke;* Khasia hills at Sohra 4000, cult., *Clarke;* Shillong 5000, cult., *Mann.* BURMA; Shan hills, at Fort Stedman, 3000, *Collett* n. 921. DISTRIB. S. China.

Stems 40—100 cm., lower branches 15—20 cm. petioles 2—3 cm. long, laminæ 4—7 cm. long 3—5 cm. wide, hairy on both surfaces, cymes sometimes loosely paniculate irregularly branched, *calyx* 2·5 mm. (tube 2 mm.), *corolla* 14 mm. (tube infundibuliform 6 mm., upper lip 8 mm.), pollen grains minute oval smooth, *nutlets* 1·25 mm.—The cultivated plant smells very strongly of Patchouli, much more so than does the Patchouli plant of commerce, but it is only grown as a curiosity; the natives of the hills of Assam do not grow this plant or the true Patchouli plant, nor do they know or use the prepared article: the Shan hill plant is devoid of smell.

2. MICROTŒNA GRIFFITHII *Prain;* glabrescent, leaves widely ovate-acute, base cuneate margin duplicate-crenate, cymes rather dense, *calyx* teeth deltoid acuminate, *galea* throat entire half as long as tube, lateral lobes of lip rounded half exceeding central ovate, *nutlets* small.

ASSAM:—"Eastern Bengal" (probably Mishmi hills), *Griffith*, n. 4059 Kew distrib.; Dibroo Mukh, *Masters*, 1072.

Stem 40—100 cm., lower branches 15—20 cm., petioles 4—5 cm. long, laminæ 7—9 cm. long 4—7 cm. wide, glabrous thinly membranous, cymes thyrsoid, *calyx* 6 mm. (tube 4 mm.), *corolla* 16 mm. (tube slightly infundibuliform above 11 mm., galea 5 mm.), pollen grains minute spherical rugulose, *nutlets* 3 mm.

39. STACHYS LINN.

* * *Herbs, stem 4-angled. Whorls few-flowered, bracts minute.*

7 *b*. STACHYS CORDIFOLIA *Prain;* ascending, stems sparsely hirsute with long spreading white hairs, leaves long petioled, ovate obtuse or subacute, deeply cordate, crenate, hispid on both surfaces with long simple hairs, floral small shorter than the calyx, ovate subsessile, whorls 4—6-

flowered, distant, *calyx* glandular-pubescent teeth triangular acute, *corolla* tube exserted.

Upper Burma; Mawyne on the Yunnan frontier, *J. Anderson.* Distrib. S. W. Yunnan, at Momien, *Anderson.*

Rootstock slender creeping, stem 25—30 cm. simple or branching at the base, radical leaves very small (1· cm. long 0·75 cm. wide, petioles as long), cauline 2·5 cm. long 2· cm. across, petioles 1·5—2 cm., hirsute with spreading hairs, *calyx* widely campanulate, slightly oblique, 5 mm. long (tube 3·5 mm., teeth 1·5 mm.), *corolla* 12 mm. long (tube 7 mm.), pale pink.

A very distinct species.

42 *b*. MOLUCELLA Linn.

Annual or perennial glabrous herbs, leaves opposite petioled or sessile, incised crenate or entire. Whorls many-fid., all axillary, bractioles subulate pungent. *Calyx* obliquely campanulate below, striately 5—10-nerved, dilated above into a broad reticulated limb elongated behind and marginally 5-muconate or 5—10-spined. *Corolla* tube included, obliquely annular within, slightly enlarged upward, limb 2-lipped, upper erect concave entire or emarginate, lower 3-fid, lateral lobes oblong suberect, mid-lobes spreading obcordate. *Stamens* 4, ascending didynamous lower longer, anthers conniving 2-locular. *Style* 2-lobed, lobes subequal subulate. *Nutlets* triquetrous truncate smooth.—Species 3, Mediterranean and Orient.

§ § Chasmonia; calyx-limb 2-lipped, prolonged behind as an erect spinescent tooth and in front as a spreading 3-parted lip with smaller radiating marginal lateral spines.

1. Molucella otostegioides *Prain;* glabrous, leaves sessile lanceolate acute quite entire nerveless, bracts 3-partite subulate spinescent.

N. W. Frontier; Suleiman range, in the Zam defile leading to Waziristan, 3500 feet, *Stewart.*

Erect, branches slender 4-angled, green, *leaves* 4 cm. base narrowed, tips sharp but hardly pungent, whorls distant, bracts all spiny, *calyx* 9—11-toothed, glabrous rigidly coriaceous, tube 8 mm. exceeding bracts throat naked, upper tooth 6 mm., lower 3 mm. long 4 mm. across, *corolla* 7 mm., tube short, upper lip entire villous, *stamens* exserted.

Habit of *Otostegia Aucheri* Boiss. with calyx like that of *Molucella spinosa* Linn. only much smaller; excluded from *Lagochilus* by its glabrous anthers.

42 *c*. LAGOCHILUS Bunge.

Smooth rigid herbs or undershrubs with incised leaves often with spinescent-tipped lobes, bracts foliar decreasing upwards. *Whorls*

axillary few-fid. bracteoles acicular often spinescent. *Calyx* tubular-campanular 5-nerved, mouth equal or oblique, teeth 5 subspinescent equal or with the upper prolonged. *Corolla* tube often shortly exserted, annular-pilose within slightly enlarged upwards, limb 2-lipped, upper lip erect, oblong, 2-fid subconcave, lower 3-fid, lateral lobes short acute erect, central spreading wide emarginate. *Stamens* 4, didynamous, lower longer ascending, filaments adherent, anthers 2-locular, lobes parallel or divergent, margins ciliate. *Style* 2-fid, lobes subequal subulate. *Nutlets* 3-quetrous apex truncate.—Species about 15, Oriental.

* Lower axils armed with sterile spinescent bracts.

1. LAGOCHILUS CABULICUS *Benth.;* stems pubescent, setose or glabrous, white, *leaves* palmately 3-5-fid, lobes oblong entire or incised obtuse or acute mucronate or not, *calyx* hispid hirsute or glabrous, teeth oblong subcuneate obtuse mucronate longer than the tube, *corolla* tube short, upper lip villous.—Lagochilus cabulicus *Benth.*, *DC. Prodr.* xii, 515; *Boiss., Flor. Orient.* iv, 769.

GILGIT; *Giles.* DISTRIB. Afghanistan, Turkestan.

Stems 18—25 cm. high 4-angled smooth, leaves 2 cm. long 1·5 cm. across, petioles 1 cm., lobules 2 mm. across, only those of the uppermost leaves and bracts usually mucronulate, barren spines 8—10 mm. long glabrous, with a pair of minute lateral suberect spinules on upper surface near base, floral spines 22—25 mm. long, hispid setose or at length glabrous with the lateral spinules 10 mm. long, acerose and setose-hispid, *calyx* tube 5 mm., lobes 8 mm. long, 4·5 mm. across, margins of lobes hispid-haired, tips acuminate mucronulate.

44. OTOSTEGIA BENTH.

1. OTOSTEGIA LIMBATA *Boiss. in Flor. Orient.* iv, 778 (1879); *Benth. mss. in Flor. Brit. Ind.* iv, 680 (1884).

2. OTOSTEGIA AUCHERI *Boiss.;* glabrous, leaves subsessile elliptic-lanceolate acute with spinescent tips, quite entire, nerveless, bracts subulate spinescent.—O. Aucheri *Boiss., Diagn.* ser. v, 40; *Benth. in DC. Prodr.* xii, 523; *Jaub. et Spach, Ill. Pl. Or.* iv, 124, t. 382; *Boiss., Flor. Orient.* iv, 778.

BRITISH BELUCHISTAN; Nal, *Duke;* Quetta, *Lace,* 3666 (in Herb. Watt.) DISTRIB. Throughout Beluchistan and S. Persia.

An erect spiny bush branching below, young branches slender 4-angled green, spines 6—12 mm., *leaves* 2·5 cm. base narrowed, minutely puberulous below, smooth above, tips pungent, whorls distant, bracts all spiny rounded straight pungent, *calyx* sparsely hairy, throat naked, flowering 6 mm., turbinate with broad membranous 5-toothed limb, upper tooth ovate acuminate, lateral smaller, lower very large rounded spine-

tipped, *corolla* 13 mm., tube short, upper lip short emarginate villous, *stamens* exserted, *nutlets* smooth truncate flattened, 3 mm. long.

Very closely related to *Otostegia limbata* Boiss. (*Flor. Orient.* iv, 778) from which it differs by its glabrous habit, spinescent-tipped leaves, bract-spines all rounded, broader lower *calyx* lobes and shorter *corolla* upper lip.

45. LEUCAS R. Br.

§ § Ortholeucas.

* * Perennial rooted. Branches 4-angled, hairs on them erect or spreading (not deflexed). *Calyx* teeth not ¼ the length of the tube.

5 *b*. Leucas Collettii *Prain;* everywhere densely softly silky with long spreading hairs, stems simple their hairs spreading and angles obtuse, leaves all sessile very small thick ovate acute, bases truncate or subcordate entire their margin elsewhere coarsely serrate, whorls many flowered, bracts linear short, *calyx* truncate teeth minute erect, *corolla* tube exannulate.

Upper Burma; Popah hill, 5000, *Collett* n. 29. Distrib. S. China.

Rootstock woody, stems short 8—15 cm. rather stout bluntly angled and distinctly grooved, leaves 1·5 cm. long 1·25 cm. wide close set softly silky below and above, *calyx* 5 mm. long, *corolla* 7 mm. long, tube not exserted.

Very like a densely silky form of *Leucas lanata* from the dry hills of the Deccan (*L. collina* Dalz.) but easily distinguished on analysis by the *calyx*, within densely villous at the mouth only and not (as in all forms of *L. lanata*) sparsely hirsute throughout the upper third, and by the much shorter *corolla* without any trace of an annulus.

48. NOTOCHÆTE Benth.

1. Notochæte hamosa *Benth.;* add to localities of *Flora of Brit. India* iv, 694.

Assam: Naga Hills, 4000—6000 feet, *Clarke, Prain.*

49. EREMOSTACHYS Bunge.

4. Eremostachys thyrsiflora *Benth.;* root-leaves obtusely incised toothed narrowed into a long petiole, floral sessile oblong dentate, lower as long as flowers, whorls in lax 5—7-flowered cymes forming lax racemes, the terminal flower of each cyme sessile, the others pedicelled along one side of the cyme branches, *bracts* 2, linear-subulate softly hairy erect as long as the calyx, *calyx* hoary-tomentose infundibuliform, teeth long subulate from a wide base shorter than the corolla.—Eremostachys

thyrsiflora *Benth., DC. Prodr.* xii, 248; *Boiss., Flor. Orient.* iv, 797; *Bunge, Lab. Pers.* 79; *Regel, Acta Hort. Petrop.* vi, 381 and ix, 567, (*Monogr. Eremostach.* 41), t. 9, f. 4, 5.

Western Panjab; Suleiman hills, *Duke;* Assigned districts, *Hamilton; Lace.* Distrib. Afghanistan (*Griffith, Bellew*); Beluchistan (*Stocks*).

Rootstock woody, stem short rather thick simple leafless hoary pubescent or glabrate 20—30 cm. high, radical petioles 3—6 cm. long, laminæ 5—8 cm. long 3—4 cm. wide, floral leaves 4 cm. long 1·5 cm. wide, cymes 3—5 cm. long, bracts 20—30 mm. long 2—3 mm. wide, pedicels 1—3 mm. long, *calyx* tube 17—28 mm. long 8 mm. wide, teeth 5 mm. long, *corolla* tube 22 mm. long, lips 9 mm. long, *ovary* densely villous.

51. GOMPHOSTEMMA Wall.

1 *b*. Gomphostemma Wallichii *Prain;* stems densely tomentose stout erect, *leaves* rugose, petioled truncate or subcordate at the base, margin serrate, apex acute, densely tomentose beneath, *spikes* erect interrupted, *bracts* truncate cordate at the base decreasing upwards, *corolla* tube hirsute within more than twice as long as calyx.—G. strobilinum var. elatius *Benth. in Wall. Cat.* n. 2151/2 and *Pl. As. Rar.* ii, 12.—G. strobilinum *Benth. Lab.* 647 and *DC. Prodr.* xii, 500; *Walp., Rep.* iii, 892; *Miq., Flor. Ind. Bat.* ii, 989 (*all in part and not* G. strobilinum *Wall. Cat.* n. 2151/1.—G. strobilinum var. typica *Hook. f., Flor. Brit. Ind.* iv, 696 (*in part*).—"G. elatius" *Wall. mss.*

Assam; Naga Hills, Kohima, 4500 feet, Phesama, 4000 feet, *Prain.* Upper Burma; Taong-doung Mts, *Wallich;* Karen hills, *O'Riley;* Shan hills, at Pwehla, *Collett;* Maymyo, 4000 feet, *King's collector.* Distrib. Western Yunnan.

Stems 200—250 cm. high, petioles 1—2 cm., laminæ 11—14 cm. long, 7—9 cm. wide, *calyx* 11 mm. long, *corolla* 30 mm. long, pale sulphur or white, rarely pink, bracts quite sessile cordate at the base, lower 40 × 20 mm., upper 12 × 8 mm.

The species resembles *G. Heyneanum* (G. strobilinum var. Heyneanum *Hook. f.*) which is, however, distinct and is recognised at once by its small purplish corollas hardly longer than the calyx. Its nearest ally is *G. nutans* which has the same calyx and corolla, but differs in having slender stems, small leaves and short drooping uninterrupted spikes. It is much less like *G. strobilinum* (type), with which Mr. Bentham associated it; that species has larger leaves tapering towards the base, *calyx* softly tomentose with long hairs, *corolla* somewhat shorter and *bracts* much smaller, cuneate at the base and subequal along the spike.

2 *b*. Gomphostemma Curtisii *Prain;* stems scabrid, leaves long-petioled ovate, or elliptic-ovate, denticulate, pubescent above tomentose beneath, whorls in large thyrsoid, cymes along the old wood below the leaves, *bracts* equalling the calyx, entire lanceolate with filiform points, *calyx* lobes narrowly lanceolate, with filiform points, longer than the tube.—G. Curtisii *Prain in Ann. Roy. Bot. Gard., Calcutta*, iii, *ined.*

Malay Peninsula; Perak, *Wray* n. 1233; *Scortechini* n. 924. Penang, *Curtis* n. 1310.

Stems flexuose 90—120 cm. long not rooting below, leaves distant, petioles 3—12 cm., laminæ 8—12 cm. long, 5—7 cm. wide, cymes 5—6 cm. long, bracts 10—15 mm. long, *calyx* 14 mm. long, *corolla* 28 mm. long, *nutlets* usually all matured, oblong, rounded above triquetrous below, glabrous, punctulate.

Nearest to *G. pedunculatum* from which it is distinguished by its narrower entire bracts and longer narrower calyx teeth as well as by its smaller leaves with longer petioles. As in *G. pedunculatum* the bracts and calyces are red-brown; the corolla, however, is in this species white.

6 *b*. Gomphostemma Scortechinii *Prain;* stems, leaves beneath and whorls sparsely brown-tomentose, leaves short-petioled elliptic acute or oblanceolate acuminate entire or subserrate, or leaves glabrous beneath tomentose above, whorls many-flowered pedunculate, flowers pedicelled bracts small subulate, *calyx* ribbed teeth long triangular, *corolla* pubescent large.—G. Scortechinii *Prain in Ann. Roy. Bot. Gard., Calcutta*, iii, *ined.*

Malay Peninsula; Perak, Gunong Ijok, *Scortechini* n. 1225.

Stems 60—100 cm., petioles 0·5—1 cm. long, laminæ 20—30 cm. long, 12—16 cm. wide, narrowed or not towards the base, bracts 8 mm. long, peduncles very short, pedicels 8—10 mm., *calyx* 22 mm. (teeth 12 mm.), *corolla* 60 mm., upper lip emarginate, style bearded near top, *nutlets* 8 mm., ovate oblong, sparsely hairy at top.

Near *G. oblongum* and *G. lucidum;* differs from both in having peduncled whorls and pedicelled flowers, and is larger than either in all its parts.

7 *b*. Gomphostemma Hemsleyanum *Prain;* stems and leaves beneath hoary-tomentose, leaves petioled rugose elliptic-ovate acute narrowed to the base, serrate, hirsute above, whorls sessile many-flowered, bracts lanceolate or linear shorter than the calyx, *calyx* teeth longer than tube, *corolla* not exceeding calyx, tube hirsute within.—G. Hemsleyanum *Prain* ex *Coll. & Hemsl., Jour. Linn. Soc.* xxviii, 116; *Ann. Roy. Bot. Gard., Calcutta*, iii, *ined.*

Upper Burma; Meiktila, *Collett* nn. 17, 887.

Stems erect, over 60 cm. high, petioles 1—3 cm. long, laminæ 10—18

cm. long, 4—7 cm. wide, *calyx* 14 mm. long, *corolla* 13·5 mm. long, incurved, *nutlets* subglobose smooth, usually all matured.

A very distinct species.

10 *b.* Gomphostemma microcalyx *Prain;* stems woody and leaves beneath pubescent or tomentose, leaves long-petioled subrugose oblong or ovate, acute crenulate pubescent above, whorls small few-flowered sessile in the lower leaf-axils and on the stem below, bracts small ovate acute, *calyx*-tube narrow teeth very short triangular, *corolla* slender limb small glabrous.—Gomphostemma microcalyx *Prain in Ann. Roy. Bot. Gard., Calcutta*, iii, *ined.*

Malay Peninsula; Perak, Larut, *Scortechini* n. 942, *Kunstler* n. 2155, *Wray* n. 835; Ulu Bubong, *Kunstler* n. 10,455.

Stems 60—150 cm. high hoary, petioles 4—5 cm. long, laminæ 12—15 cm. long 7—9 cm. wide, base abruptly narrowed, whorls about 6-fld., bracts 6—7 mm. long, *calyx* 7 mm. long teeth 2 mm., *corolla* 26 mm., orange, tube very slender, throat hardly inflated, both lips small.

Resembles *G. Thomsoni* but with a very different calyx and with much smaller fewer-flowered whorls and smaller leaves.

53. TEUCRIUM Linn.

§ Teucris. *Peduncles* opposite axillary 1—3 fld. racemose or paniculate. *Calyx* campanulate equally 5-toothed.

1*. Teucrium scindicum *Prain;* hoary, stems many rigid shortly paniculately branched above, leaves ovate orbicular subpinnatisect segments shortly narrowly linear margins recurved, pedicels ½ exceeding calyx and bracts, *calyx* subglabrous shortly campanulate teeth triangular shorter than tube, *corolla* longer than calyx lower lobe elliptic-cucullate obtuse, filaments exserted glabrous, *nutlets* minutely pruinose.

Scinde:—*Stocks;* (specn. in *Herb. Dalzell*).

An erect many-stemmed perennial with thickened rootstock, 30—40 cm. high, leaves 14—16 mm. long 9—10 mm. wide, segments 6 mm. by 0·5—1·5 mm., pedicels 8 mm., *calyx* 8 mm., (tube 5 mm. teeth 3 mm.), *corolla* 15 mm. long, central lip-segment 6 mm. long 5 mm. across, filaments 7 mm. long, *nutlets* 2·5 mm. elliptic, slightly rugulose.

Near to *P. Taylori* to which Stocks in *Herb. Dalzell* had referred it but differs in having the filaments all glabrous whereas the anterior pair in *P. Taylori* are hirsute below; from *P. orientalis*, which it also comes near, it differs in having the terminal lobe of corolla rounded instead of acute; from *P. parviflorum* it differs in having the filaments exserted. It is diagnosed at once from all three by the teeth of the calyx being shorter than the tube.

§ § Scorodonia. (*F. B. I.* iv, 700).

6 *b*. Teucrium Wattii *Prain*; stem stout diffusely branched rufous-villous, leaves long-petioled oblong-ovate acute, base cuneate entire margin elsewhere sharply irregularly toothed, racemes panicled bracts linear-lanceolate hardly exceeding pedicels, *calyx* campanulate declinate, upper tooth rounded, 2 lower lanceolate, *corolla* tube subequalling calyx, terminal lobe ovate the four upper rounded obtuse.

Manipur:—Kassome summit, 6000, *Watt*, n. 5,127.

A straggling herb, stems 80—120 cm. long almost terete below, densely rufous-villous with long spreading hairs, leaves 13—15 cm. long, 5—7 cm. across, membranous, nerves softly hirsute, petioles densely villous 5—7 cm. long, racemes rufous-villous, bracts 6—7 mm. long, pedicels 6 mm. long, *calyx* 7 mm. (tube 4 mm.) upper tooth ovate acuminate twice as broad as rounded obtuse lateral and as long as lower pair connivent lanceolate acute, teeth within and calyx throat setose, *corolla* tube 6 mm. long, lip 7 mm., filaments sparingly hairy.

Nearest to *T. quadrifarium* from which it differs by the petioles being 3 times as long, the leaves cuneate not cordate at base, and membranous not rugose, and by the bracts which are inconspicuous instead of large ovate. The calyx in both is very similar but the corolla-tube is in *T. Wattii* longer and the upper pair of lobes are rounded like the lateral, not, as in *T. quadrifarium*, acute.

§ § § Scordium. (*F. B. I.* iv, 702).

9. Teucrium serratum *Benth.*; perennial sparingly hairy or glabrate, stems leafy, leaves small lanceolate serrate base cuneate apex acute, bracts lanceolate longer than flowers, branches long slender paniculate, whorls 2—4-fld. rather remote, pedicels $\frac{1}{2}$ exceeding calyx, *calyx* teeth triangular subequal shorter than campanulate gibbous tube, *corolla* $\frac{1}{2}$ exceeding calyx, filaments subexserted sparsely hirsute, *nutlets* small glabrous.—Teucrium serratum *Benth.*, *DC. Prodr.* xii, 586; *Boiss.*, *Flor. Orient.* iv, 813.

N.-W. Himalaya; Gilgit, *Giles*. Distrib. Afghanistan.

Stems 25—40 cm. high, rootstock slender, leaves 30—45 mm. by 8—14 mm. decreasing upwards, pedicels 9—11 mm. long, *calyx* 6 mm. long (tube 4 mm. teeth 2 mm.), *corolla* 8 mm. long, *nutlets* 1·5 mm., spherical, distinctly rugulose.

Near *P. Scordium* Linn. which it follows and from which it differs by having leaves decreasing upwards instead of uniform, and acute at the apex instead of obtuse, also by having distinctly longer pedicels and a slightly smaller corolla.

§ § § § Polium. *Whorls* condensed in ovate or globose terminal heads. *Calyx* tubular campanulate teeth subequal.

10. Teucrium Stocksianum *Boiss.*; dwarf shrubby densely hoary-

pubescent, branching from the base with rigid tufted stemlets again decussately branching, leaves small elliptic subentire, heads few-fld. dense small, flowers small sessile, *calyx* campanulate hoary, teeth short ovate obtuse, *corolla* yellow ½ exceeding calyx, anthers exserted.—Teucrium Stocksianum *Boiss.*, *Diagn.* ser. 2, iv, 58 and *Flor. Orient.* iv, 821.—T. leucocladum *Herb. Ind. Or. H. f. & T., nec Boiss.*

WESTERN PANJAB:—Peshawar district, *Stewart;* Dera Ghazi Khan district, *Alcock;* Dera Ismail Khan district, *Williams;* Quetta, *Lace.* DISTRIB. Beluchistan, S. Afghanistan.

Rootstock stout woody, stems 10—12 cm., branches 3—5 cm., leaves 13 mm. by 6 mm. apical third obtuse crenate, crenations shallow basal two-thirds cuneate entire, bracts 6 mm. by 3 mm. entire or slightly crenate at apex, *calyx* 6.5 mm. (tube 6 mm.), *corolla* 8 mm. Dr. Alcock has described this species in the field, his notes say *inter alia* "leaves "greyish green, odour highly aromatic, taste very bitter, flowers yellow; "not met with below 5000 feet on the Suleiman hills." It is most nearly allied to *T. leucocladum* from Arabia and *T. cuneifolium* from Crete.

[In concluding the Writer has to acknowledge his great indebtedness to Mr. W. B. HEMSLEY, F. R. S. who has kindly compared specimens of the majority of the species here described with specimens at Kew. As is always the case there are a few points whereon opinions differ and in view of the fact that Mr. Hemsley's experience and skill are much the greater, the writer feels it only just to mention the chief of these, since they affect the systematic value of the plants concerned.

Mr. Hemsley thinks that *Plectranthus Brandisii* (p. 296) might really be united to P. *Stracheyi* and that *Scutellaria andamanica* (p. 307) may be only a form of *S. oblonga;* he believes too, that the two forms of *Zataria* (p. 300) are not specifically distinct but that the two forms included under *Nepeta glomerulosa* (p. 304) are. In the two last cases Mr. Hemsley is almost certain to be right; in the two first it is possible that the writer has laid too great stress on the fact that both plants exist at elevations, and flower at seasons of the year different from those characterising the species which they respectively resemble. These characteristics may be only due to their rather remote geographical areas; in any case *Scutellaria andamanica* and *Plectranthus Brandisii* may be looked an as representative of *S. oblonga* and P. *Stracheyi* respectively. Still the corolla of *S. andamanica* is somewhat different from that of *S. oblonga*, and the calyx of P. *Brandisii* from that of P. *Stracheyi*. The prominent ruby-red glands characteristic of the outer surface of the calyx and under surface of the leaves of P. *Stracheyi* are absent from P. *Brandisii* which has leaves exactly like those of *P. Walkeri* and a calyx like that of *P. Stocksii*.

On the other hand the writer believes *Dysophylla communis* (p. 299) to be only a form (hardly distinguishable as a variety) of *D. auricularia.*]

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JOURNAL

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Part II.—NATURAL SCIENCE.

SUPPLEMENT.—1890.

1.—*Catalogue of the* Insecta *of the Oriental Region.* No. 2, *Order* Coleoptera, *Family* Carabidæ.—*By* E. T. Atkinson, B. A.

Dr. Horn writes that the *Carabidæ* form one of the members of the Adephagous series of Coleoptera, which 'is readily recognized by the predaceous character of its mouth parts, its slender antennæ (except in the *Gyrinidæ*), pentamerous tarsi, and the structure of the first abdominal segment, which is in all cases divided or hidden by the posterior coxæ in such a manner that it is entirely lateral, rarely appearing as a small triangular piece between the posterior coxæ.'

The classification of the *Carabidæ* is still unsettled, and, notwithstanding the very great attention paid to this group, there is no generally recognized arrangement that can be followed for the species of the Oriental Region. The number of groups, their extent, relative position, and nomenclature, still leave much to be desired. Leconte, † writing in 1862, remarked:—'Numerous efforts have been made to indicate a rational distribution of the genera, and the attempts commenced by Latreille and Bonelli, and successively improved by the suggestions of Dejean, Erichson, Schiödte, Lacordaire, and myself, have finally, in the expert hands of Schaum, * assumed a form in which probably permanent results have been obtained.'

† 'Classification of the Coleoptera of North America,' in Smithsonian Miscellaneous Collections, 1862.

* Naturg. Ins. Deutschl. 1860, and 'Das system der Carabicinen,' in Berlin. Ent. Zeits., iv, 1860, p. 161.

Following the suggestions of the later authors, Leconte divided the whole family into three sub-families, formed thus :—

Middle coxæ distant;
Epimera of the mesonotum reaching the coxæ ... 1. CARABIDÆ.
Epimera of the mesonotum not reaching the coxæ ... 3. HARPALIDÆ.
Middle coxæ contiguous ... ... 2. OZÆNIDÆ.

In the *Carabidæ*, he placed the tribes *Omophronini*, *Hiletini*, *Carabini*, and *Scaritini*. To the second sub-family he attached the *Ozænini* and *Pseudomorphini*, and all the rest to the third sub-family. Leconte, writing of the Coleoptera of North America, did not indicate the position of the extra-American genera.

In 1880, † Kölbe, starting with the hypothesis that the land-beetles are later than the water-beetles, and that the points common to both are of primary value in classification, divided the family '*Carnivora*' into six sections, which are further subdivided into groups. His arrangement, however, does not help us, and the placing of the family *Cicindelidæ* as a simple subsection of one of his groups does not appear to be correct.

In 1881, Dr. G. H. Horn, ‡ reviewed the genera of the *Carabidæ* of North America, and, in doing so, gave the following arrangement of the Adephagous families, which is followed in the present catalogue :—

I. Metasternum with an ante-coxal piece, separated by a well-marked suture, reaching from one side to the other, and extending in a triangular process between the coxæ.
Antennæ 11-jointed : posterior coxæ mobile and simple; habits terrestrial.
Antennæ inserted on the front above the base of the mandibles : *Cicindelidæ*.
Antennæ arising at the side of the head, between the mandibles and the eyes : *Carabidæ*.
Antennæ 10-jointed : posterior coxæ fixed, and with large plates almost entirely concealing the abdomen : habits aquatic : *Haliplidæ*.

II. Metasternum with a very short ante-coxal piece, the suture indistinct, posteriorly not prolonged between the coxæ : habits aquatic : legs ambulatorial : anterior coxæ globular : *Amphizoidæ*.
Legs natatorial : anterior coxæ conical : *Pelobiidæ*.

† Natürliches System der Carnivoren Coleoptera, in Deutsche Ent. Zeits., xxiv, 1880, p. 258.

‡ 'On the genera of the Carabidæ, with special reference to the fauna of Boreal America,' in Trans. Amer. Ent. Soc., 1880, p. 91-196.

III. Metasternum prolonged behind in a triangular process, the antecoxal piece entirely wanting : habits aquatic.

Antennæ slender, filiform or setaceous, abdomen with six segments : eyes two : *Dytiscidæ.*

Antennæ irregular, very short : abdomen with seven segments of which the first two are closely united : eyes four : *Gyrinidæ.*

The *Carabidæ* are divided into three sub-families :—

Middle coxal cavities not entirely enclosed by the sterna, the epimeron of the mesosternum attaining the coxæ : *Carabinæ.*

Middle coxal cavities entirely enclosed by the sterna, the epimeron of the mesosternum not attaining the coxæ.

Head without antennal grooves beneath and with distinct super-orbital setæ : ambulatorial setæ of abdomen usually well developed. *Harpalinæ.*

Head with distinct, usually long, antennal grooves beneath, and without distinct super-orbital setæ : ambulatorial setæ of the abdomen feeble or wanting. *Pseudomorphinæ.*

The Harpalinæ are further subdivided into two sections, the first in which the head has two super-orbital setigerous punctures, the second in which there is but one. The groups included in the subfamilies are as follows :—

Carabinæ.
1. *Omophronini.*
2. *Trachypachini.*
3. *Cychrini.*
4. *Carabini.*
5. *Pamborini.*
6. *Hiletini.*
7. *Elaphrini.*
8. *Loricerini.*
9. *Nebriini.*
10. *Migadopini.*
11. *Metriini.*
12. *Mystropomini.*
13. *Promecognathini.*
14. *Enceladini.*
15. *Scaritini.*

Harpalinæ I.
16. *Panagæini.*
17. *Siagonini.*
18. *Ozænini.*
19. *Nomiini.*
20. *Psydrini.*
21. *Morionini.*
22. *Bembidiini.*
23. *Pogonini.*
24. *Pterostichini.*
25. *Licinini.*
26. *Platynini.*
27. *Anchonoderini.*
28. *Ctenodactylini.*
29. *Odacanthini.*
30. *Dryptini.*
31. *Mormolycini.*
32. *Agrini.*
33. *Egini.*
34. *Lebiini.*
35. *Helluonini.*
36. *Graphipterini.*
37. *Anthiini.*
38. *Cratocerini.*
39. *Orthogonini.*

Harpalinæ II
40. *Brachynini.*
41. *Apotomini.*
42. *Broscini.*
43. *Zacotini*
44. *Peleciini.*
45. *Chlænini.*
46. *Zabrini.*
47. *Harpalini.*
48. **Pseudomorphinæ**

Several of these groups are further subdivided, but these details need not be noticed here.

M. Borré writes of this arrangement :—'Beaucoup des genres prennent ainsi des places bien différentes de celles où nous sommes accoutumés de les voir ; déjà, dans l'arrangement des tribus, nous avons pu voir que des affinités consacrées par un usage pour ainsi dire général, sont tout à fait brisées, et je dois dire avec justice, car tous ceux qui ont approfondi un peu la matière le savent, il n'y avait dans notre classification que trop de traces de cette mesquine étude que l'on peut l'appeler l'entomologie

de clocher, c'est-à-dire que les premiers auteurs s'étaient mis en route avec l'insoutenable préjugé que notre petite Europe allait nous offrir l'abrégé exact de la nature du globe, et la possibilité de formuler par elle seule le système de cette nature.' The arrangement, however, has been adopted in Leconte and Horn's edition* of Leconte's work on the classification of American Coleoptera already noticed, and in most of the later European catalogues. There still remains the task of amalgamating the groups of all countries in one list.

Another attempt at the classification of the *Carabidæ* has been made by M. des Gozis.† This is based principally on the presence or absence of setigerous pores in the pronotum. He distributes the genera into six sections, but this arrangement appears to bring together genera incongruous in other respects, *Oodini*, *Omophronini*, *Dryptini* and *Zabrini* in the first group; *Brachynini* and *Harpalini* in the second group; whilst the fifth group contains an agglomeration of apparently widely distinct genera.

Mr. Sharp, in a paper‡ on the *Carabidæ*, quotes Leconte's remarks already noticed, and adds :—'The learned and energetic American expert had himself contributed greatly, probably as much or more than any other of the authors he mentions, to the rational system of classification he describes, and had no doubt done so at the expense of great labour and time, but the lapse of time has not altogether justified his expression of reliance as to the permanency of the results then reached. Duval, Chaudoir, C. J. Thomson and others have worked, since Leconte, at the classification of these insects, and each has contributed more or less to our knowledge, and has thus induced change. The genera of a large number of groups have been entirely remodelled by Chaudoir; while of the larger groups it may be truly said that at present but little accord exists as to their limits and arrangement, except in the case of certain comparatively small and isolated groups.'

Mr. Sharp further remarks :—'Indeed I am, myself, of opinion that classification of the groups superior in complexness to genera is at present (1883) so extremely far from approximation to the actual facts, and that these groups will thus probably in future assume a totally different form, that we should do well to refrain from giving them names at all,

* 'Classification of the Coleoptera of North America,' by J.L. Leconte and G. H. Horn, in Smithsonian Miscellaneous Collections, 1883; and separate, 1888. Bibliography of the American Carabidæ, *ib.*, p. 536.

† 'Mémoire sur les pores sétigères prothoraciques dans la tribu des Carnivores,' in MT Schwe. Ent. Ges. vi, 1882, p. 285.

‡ Trans. Ent. S. Lond., 1883, p. 61. 'On the classification of the *Adephaga*, or carnivorous series of the Coleoptera.'

and contenting ourselves with the simple method of numbering the tribes or groups, instead of naming them.' As pointed out by Mr. Sharp, the number of tribes, or groups of genera, in each sub-family is greater than those given by Dr. Horn, whose investigations refer mainly to the species of North America. Mr. Sharp also remarks that, in the case of many of the tribes adopted by Dr. Horn, that writer makes use of the same names for them as have been used by his predecessors, although giving to those names a widely different extension or meaning. Though this is the usual plan, it gives to classifications a false appearance of accord and permanence, and also, by giving to the names the sanction of long use, tends to make them appear in the eyes of many of more importance than they are in fact. With these remarks I thoroughly concur, and any one who has had to study the literature of the *Carabidæ*, will, I am sure, endorse them. In preparing this paper, I have found that it would be possible almost to count as a group* each genus, and I consider the best course is to arrange the genera as near as possible in the groups that have been established with some authority, and then to give fairly full references†, which those who have the knowledge and material can hereafter work out for themselves. I possess neither the time nor the material necessary for this purpose, and my object is merely to help others by giving a list of the recorded species from the Oriental Region.‡

Bates H. :—

On the group *Pericalini* :—Ent. Mon. Mag., vi. 1869. p. 69.
„ „ *Lachnophorini* :—*l.c.* viii. 1871. p. 29.
Biologia Centrali-Amer., Col. i (i), 1881.

Bonelli, F. A. :—

'Observations entomologiques,' in Mémoires de l' Académie Impériale des Sciences, Littérature et Beaux-arts, classe de Physique et de Mathématique, pour les années, 1809-10. Turin, 1809, p. 21 : *ibid.*, 1813 p. 442. [My copy does not contain the *tab. syn.* quoted by authors.]

Brulle, A. :—

Histoire naturelle des Insectes, par M M Audouin et Brullé. (Coléoptères). iv-vi. Paris, 1834.

* Let any one compare the notes in the Zoological Record for a series of years, and he will at once appreciate the extent of the existing confusion, which the *Zoologischer Jahresbericht* got over by giving the genera in alphabetical order.

† A list follows of the principal papers of Chaudoir, Putzeys, Bates, and others on classification.

‡ A few extra-Oriental species, marked by an asterisk, are given from the collection made by the Yarkand Mission of which the types are in the Indian Museum. The species identified in the Indian Museum have the precise locality in angular brackets.

Chaudoir, M. le Baron de :—

Bulletin de la Société Impériale des Naturalistes, Moscou.

1.—Genres nouveaux et espéces nouvelles des *Carabiques, ib.* :—x (3), 1837, p. 1 ; (7) p. 3.

2.—Tableau d'une nouvelle subdivision du genre *Feronia. ib.*, xi (1), 1838, p. 1.

3.—Genres nouveaux *ib.*—xv, 1842, p. 832 ; xvi, 1843, p. 383, 671.

4.—Trois Mémoires sur la famille des *Carabiques : ib.*, xvii, 1844, p. 415.

5.—Note sur le groupe des *Stomides : ib.*, xix (2), 1846, p. 511.

6.—Mémoire sur la famille des Carabiques, I., *ib.*, xxi (1)., 1848, p. 1 :—Odacanthini (p. 26), Pericalus (111). II, *ib.*, xxiii (1), 1850, p. 1 :—Drypta, p. 33, Anthia (41), Callida (51), Catascopus (349), Coptodera (356), Pristonychus (379), Dicranoncus (392), Callistus (394), Lasiocera (402), Omophron (424). III, *ib.*, xxv (1), 1852, p. 1 :—Triplogenius (p. 71). IV, *ib.*, xxvii (1), 1854, p. 112, 279 :—Ozaenini (p. 279). V, *ib.*, xxviii (1), 1855, p. 1 :—Scaritini (p. 5). VI, *ib.*, xxix (3), 1856, p. 187 :—Chlaenini, xxx (3), 1857, p. 1.

7.—Materiaux pour servir à l'étude des *Cicindelètes* et des *Carabiques, ib.*, xxxiii (4), 1860, p. 269 *(Cicindelidæ)* : xxxiv (1), 1861, p. 491 :—Cychrini (p. 493), Carabini (502), Nebriini (504), Opisthius (505), Hiletini (506), Dendrocellus (545), Drypta (546), Galerita (551), Anthia (561) : *ib.* (2), p, 335 : —Revision de l' ancien genre *Panagaeus :*—Epicosmus (p. 335), Peronomerus (354), Euschizomerus (354).

ib., xxxv (4), 1862, p. 275 :—Casnonia (p. 275), Dicraspeda (300) Helluodes (302), Physotocraphus (303), Pogonoglossus (304), Zuphium (310).

8.—Essai monographique sur le genre *Abacetus*, xlii (1), 1869, p. 355.

9.—Monographie des *Graphiptérides, ib.*, xliii (1), 1870, p. 281.

10.—Monographie des *Lèbiides, ib.*, xliii (2), 1870, p. 111 :—Dictya (p. 123), Nematopeza (146), Lebia (162) : *ib.*, xliv (1), 1871, p. 1 :—Stephanas (p. 55).

11.—Observations sur quelques genres des *Carabiques, ib.*, xlv (1), 1872, p. 382 :—Callistomimus (p. 382), Casnonia (397).

12.—Materiaux pour servir à l'étude des *Feroniens ;*—xlvi (2), 1873, p. 85 ; *ib.*, xlviii (1), 1874, p. 1 :—Aepsera (p. 29).

13.—Etude monographique des *Masoréides*, et des *Tetragonodérides, ib.*, li (3), 1876, p. 1 :—Caphora (p. 8), Masoreus (11), Cyclosomus (27), Tetragonoderus (53), Mnuphorus (69), Tilius (71).

14.—Monographie des *Siagonides, ib.*, l (1), 1876, p. 62 :—Siagona (p. 76), Coscinia (115).

15.—Genres nouveaux et espèces inédites des Carabiques :—*ib.*, liii (3), 1878 p. 1 :—Rhathymus (p. 7), Tropidocerus (9), Abacetus (25), Triplogenius (31).

16.—Essai monograghique sur les *Morionides, ib.*, lv (1), 1880, p. 317 :—Morio, Morionidius.

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1.—Genres et espéces des *Carabiques* nouveaux :—iv, 1837, p. 429.

2.—Monographie du genre *Colpodes*, Macleay :—(3 s.) vii, 1859, p. 287.

3.—Revision des genres *Dicranoncus* and *Colpodes* ; (5 s.) viii, 1878, p. 275.

4.—Monographie des *Oodides* :—(6 s.) ii, 1882, p. 317, 485.

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1.—Monographie du genre *Pœcilus* :—xvi, 1876, p. 1.

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1.—Révision du groupe des *Ozénides*, xi, 1867-68, p. 43 :—Picrus (p.45), Itamus (51), Eustra (71).

2.—Révision des *Trigonotomides*, *l. c.*, p. 151 :—Triplogenius (p. 154), Trigonotoma (158).

3.—Mémoire sur les *Thyréoptérides*, xii, p. 113 :—Brachichila (p. 123), Tantillus (126), Sinurus (129), Mormolyce (131), Serrimargo (134), Peripristus (135), Thyreopterus (141), Miscelus (152), Holcoderus (153), Catascopus (158), Pericallus (158).

4.—Mémoire sur les *Coptodérides*, *ib.*, p. 163 :—Coptodera (p. 163), Lioptera (208), Moctherus (240), Dolichoctis (245), Brachyctis (252).

5.—Essai monographique sur le groupe des *Pogonides*, *ib.*, xiv, 1870-71, p. 21 :—Pogonus (p. 23), Patrobus (40).

6.—Essai monographique sur les *Orthogoniens*, *ib.*, xiv, 1870-71, p. 95 :—Orthogonius (p. 98), Hexachaetus (124), Actenoncus (126).

7.—Essai monographique sur les *Drimostomides* et les *Cratocérides*, *ib.*, xv, 1872, p. 5 :—Drimostoma (p. 9), Stomonaxus (13), Diceromerus (15).

8.—Monographie des *Callidides*, *ib.*, xv, 1872, p. 97 :—Callida (p. 103), Crossoglossa (177), Bothynoptera (181), Endynomena (186).

9.—Monographie des *Brachynides*, *ib.*, xix, 1876, p. 11 :—Pheropsophus (p. 16), Brachynus (49), Styphlomerus (87), Mastax (97).

10.—Essai monographique sur les *Panagéides*, *ib.*, xxi, 1878, p. 83 :—Brachyonychus (p. 86), Epicosmus (104), Eudema (133), Microcosmus (139), Dischissus (149), Euschizomerus (157), Peronomerus (162), Trichisia (164).

11.—Monographie des *Scaritides*. *ib.*, xxii, 1879, p. 124-181 ; xxiii, 1880, p. 5-130 :—Oxylobus (p. 129), Coptolobus (159), Distichus (p. 44), Scarites (63.)

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2.—*Féronides* from Australia :—vi, 1874, p. 568 : *Harpaliens* from Australia, xii, 1878, p. 475.

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A list of the genera and species described by this author (1834—1867) will be found in the Supplement to vol. iv of the Horae Societatis entomologicae Rossicae. St. Petersburg, 1868.
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6.—Monographie des *Calathides*, *l. c.*, xvi, p. 19.
7.—Broscosoma, Carabidum genus novum. Brussels, 1846.
8.—Les Broscides, Stettin Ent., Zeit., 1868, p. 304 :—*Broscosoma*, p. 253.
9.—Etude sur les Amara de la Collection de Chaudoir. Liège, 1866.
10.—Monographie des Amara. L'Abeille, 1871, p. 100.
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Lacordaire, Gen. Col., i, 1854, p. 41 ; Horn, Gen. Carab., p. 105 : Leconte and Horn, Class, Col., 1883, p. 6.

Genus **OMOPHRON.**

Latreille, Hist. Nat. Ins., iii, 1802, p. 89 : Lacord., Gen. Col., i, p. 42 : Mun. Cat., p. 42 : Chaudoir, Rev. Mag. Zool., 1868, p. 54 : Bates, Biol. Centr. Amer. Col., i, p. 19.

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Homophron, Zool. Rec., 1875, p. 279.
Scolytus, pt. Fabr., Ent. Syst., i, 1792, p. 180.

Brettinghamae, Pascoe, Jour. Ent., i, 1860, p. 38.
Hab. India.

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Hab. India, Bengal.

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CYCHRINI :—

Horn, Gen. Carab., 1881, p. 107 : Leconte & Horn, Class. Col., 1883, p. 7.

[M. Géhin (Cat. Carab., 1885) places the *Cychrini* with the *Carabini* which he describes as comprising three genera, designated sub-tribes by him, *Cychrus*, *Carabus* and *Calosoma*, each with numerous sub-divisions. M. Géhin writes :—" Tous les groupes que je viens d'examiner ont pou moi le même valeur systématique, ce sont des sous-genres des *Carabus*, *Calosoma* et *Cychrus*. Si dans le synopsis j'ai fait précéder leur nom des mots ' genre' ou ' sous-genre ", c'est pour montrer le peu d'harmonie qui existe entre les entomologistes". For the reasons given by Dr. Horn (*l. c. supra*), the *Cychrini* are retained as a separate group, and I give the other names as subgenera or synonyms, except *Coptolabrus* and *Damaster* which appear to be well established genera].

Genus **CYCHRUS.**

Fabricius, Skrift. Nat. Selsk., iii (2), 1794, p. 68-71 : Clairv., Ent. Hel., ii, p. 116 t. 19 : Latr., Hist. Crust., iii, p. 90 : Lacord., Gen. Col., i, p. 62 : Chaudoir, Bull. Mosc., xxxiv (1), 1861, p. 493 : Mun. Cat., p. 82 : Gehin, Cat., 1885, p. xxxvi, 73.

Brennus, Motsch., Bull. Mosc., xxxviii (4), 1865, p. 311 : Gehin, Cat., p. xxxvii, 75.

Irichrous, Newman, Ent. Mag., v., 1838, p. 385 : Gehin, Cat., p. 71.

Pemphus, Motsch., Bull. Mosc., xxxviii (4), 1865, p. 312 : Gehin, Cat., p. xxxvi, 73.

Scaphonotus, Latreille, Ic. Règne Anim., i, 1822, p. 87 : Mun. Cat., p. 84 : Gehin, Cat., p. xxxvi, 71.

Sphaeroderus, Dejean, Spec., ii, 1826, p. 14 : Mun. Cat , p. 84 : Gehin, Cat. p. xxxvi, 72.

Davidis, Fairmaire, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 307.
Hab. Yunnan.

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CARABINI :—
Horn, Gen. Carab., p. 108 : Leconte and Horn, Class. Col., p. 9.

Genus **CARABUS.**

Linn., Syst. Nat., i (2), 1767, p. 668 : Lacord., Gen. Col., i, p. 54 : Chaudoir, Bull. Mosc., xxxiv (1), 1861, p. 502 : Mun. Cat., p. 57 : Gehin, Cat. Carab., 1885, p. xi, xxv : Kraatz, Deutsche Ent. Zeits., 1878, passim ; xxx, 1886, p. 225 : Morawitz, Mém. Acad. St. Petersb., xxxiv, 9, 1886, p. 1.

Acoptolabrus, Morawitz, Mèm. Acad. St. Petersb., xxxiv (9), 1886, p. 17.

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Aplotherax, Waterhouse, Trans. Ent. S. Lond., iii, 1842, p. 207 : Lacord., Gen. Col., i, p. 58 : Gehin, Cat., p. xxviii, 54.

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Autocarabus, Seidlitz, *l. c.*, p. 7 : Kraatz, *l. c. supra*, p. 362.

Axinocarabus, Morawitz, Mém. Acad. St. Petersb., xxxiv (9), 1886, p. 55.

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Cathaicus, Bates, Ent. Mon. Mag., 1872, p. 32 : Kraatz, Deutsche Ent. Zeits., 1878, p. 151 : Gehin, Cat., p. xv, 13.

Cechenes, Fischer, Ent. Imp. Russ., i, 1822, p. 110 : Gehin, Cat. p. xxiv, 39.

Cechenochilus, Motsch., Ins. Russ., 1846, p. 74, note. : Gehin, Cat., p. xxiv.

Ceroglossus, Solier, Mém. Acad. Turin., 1848, p. 10 ; *id.*, Truqui and Baudet, Stud. Ent., p. 49 : Motsch., Bull. Mosc., xxxviii (4), 1865, p. 283 : Gehin, Cat., p. xxviii, 54.

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Cratocephalus, Kirsch, Stettin. Ent., Zeit., 1859, p. 199 : Gehin, Cat., p. xvi, 13.

Ctenocarabus, G. Thoms, Op. Ent., 1875, 683 : Gehin, Cat., p. xxvi, 44.

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Eupachys, Chaudoir, Stettin, Ent. Zeit., 1857, p. 80 : Gehin, Cat., p. xvi, 13.

Eurycarabus, Gehin, 1876 ; Cat., p. xxi, 33 : Kolbe, Ent. Nachr., xii, 1886 p. 273.

Eutelocarabus, Gehin, 1876 ; Cat., p. xix, 22.

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Goniocarabus, Gehin, Cat., p. xvii, note, = preceding.

Hadrocarabus, G. Thoms, Op. Ent., 1875, p. 646 : Gehin, Cat., p. xvi, 13 ; Ganglb., Deutsche Ent. Zeits., 1886, p. 228.

Hemicarabus, Gehin, 1876 ; Cat., p. xix, 24.
Hygrocarabus, G. Thoms., Op. Ent., 1875, p. 682 ; Gehin, Cat., p. xix, 25.
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Mimocarabus, Gehin, 1876 ; Cat., p. xxviii, 53.
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Oreocarabus, Gehin, 1876 : Cat., p. xxvi, 44.
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Procrusticus, White, Ann. Mag. N. H. 1845, p. 111 ; Gehin, Cat., p. xii, 5: Ganglb., Deutsche Ent. Zeits., 1887, p. 146.
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Rhabdotocarabus, Seidlitz, Fauna Baltica (*ed.* 2), 1887, p. 6.
Sphodristus, Motsch., Bull. Mosc., xxxviii (4), 1865, p. 295 : Gehin, Cat., p. xi, 4 : Kraatz, Deutsche Ent. Zeits., xxxi, p. 146.
Sphodristocarabus, Gehin, 1876 ; Cat., p. xx, 27 : Ganglb., Deutsche Ent. Zeits., xxxi., 1887, p. 129.

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Tribax, Fischer, Bull. Mosc., v, p. 483 : G. Thoms., Op. Ent., 1875, p, 670 : Gehin, Cat.,p. 8 : Ganglbauer, Deutsche Ent. Zeits., xxx, 1886, p. 305 : Reitter, Wien Ent. Zeits, 1887, p. 186.

Albrechtii *(Morphocarabus)*, Morawitz, Bull. Acad. St. Petersb., v, 1862, p. 237 : Bates, Trans. Ent. S. Lond., 1873, p. 233 : Gehin, Cat., p. 17.
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,, *Lewisii*, Bates, Trans. Ent. S. Lond., 1883, p. 229.
,, *Maiyasanus*, Bates, *l. c*,. 1873, p. 232 ; *id.* 1883, p. 230.
,, *multistriatus*, Motsch., Bull. Mosc., xxxviii (4), 1865, p. 283.
,, ? *striatus*, Chaudoir. *q. v.*
Hab. Japan, Canton.

caschmirensis *(Megodontus)*, Kollar, in Hügel's Kaschm., iv (2), 1844, p. 499, t. 23, f. 4 : Gehin, Cat., p. 10.
var. *lithariophorus*, Tatum, Ann. Mag. N. H., xx, 1847, p. 14.
Hab. Himálaya, Kashmir [*Ind. Mus.*, Murree].

coriaceipennis *(Trachycarabus)*, Chaudoir, Rev. Mag. Zool., (2 s.) xv, 1863, p. 114 : Gehin, Cat., p. 53.
Hab. China.

Davidis *(Morphocarabus)*, Deyrolle and Fairm., Ann. Soc. Ent. Fr., (5 s.) viii, 1878, p. 87, t. 3, f. 4 : Gehin, Cat., p. 16.
Hab. Middle China.

Delevayii, Fairmaire, Le Nat., viii, 1886, p. 223 : Ann. Fr., *l.c.*, (6 s.) vi, 1886, p. 308.
Hab., Yunnan.

Feæ, R. Gestro, Ann. Mus. Civ. Gen., (2 s.) vi, 1888, p. 106.
Hab., Burma, Bhamo, Kachin-Kauri.

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Hab., China [*Ind. Mus.* China].

Hienfoungii *(Eucarabus)*, J. Thomson, Arch. Ent., i, 1857, p. 166 : Gehin, Cat., p. 29.
Hab. China [*Ind. Mus.* China].

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Hab. Sikkim [*Ind. Mus.* Darjiling].

insulicola *(Morphocarabus)*, Chaudoir, Rev. Mag. Zool., (2 s.) xxi, 1869, p. 26 : Bates, Trans. Ent. S. Lond., 1873, p. 232 ; *ib.*, 1876, p. 2 : Gehin, Cat., p. 17.
Kaempferii, G. Thomson, Opusc. Ent., 1875, p. 729.
Hab. Japan, Canton *(Putzeys)*.

prodigus *(Morphocarabus)*, Erichson, Nova Acta Leop. Car. Nat. Cur., xvi, Suppl., 1834, p. 221, t. 37, f. 1 : *(Apotomopterus)* Hope, Col. Man., ii, p. 47 : Gehin, Cat., p. 16.
Hab. China [*Ind. Mus.* China].

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? = *Albrechtii*, Morawitz, *q. v.*
Hab. China.

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Wagae *(Sphodristocarabus)*, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) ii, 1882, p. 65 : Gehin, Cat., p. 28.
Hab. N. India.

Wallichii *(Oreocarabus)*, Hope, Gray's Zool. Misc., 1831, p. 21 : Gehin, Cat., p. 46.
Boysii, Tatum, Ann. Mag. N. H., viii, 851, p. 51.
Hab. Nepal.

yunnanus, Fairmaire, Le Nat., viii, 1886, p. 223 : Ann. Soc. Ent. Fr., (6 s.) vi, 1886, p. 309.
Hab. Yunnan.

Genus **COPTOLABRUS.**

Solier, Truqui and Baudet's Stud. Ent., i, 1848, p. 58 : Mun. Cat., p. 77 : Gehin, Cat., p. xxii, 35.
Macrothorax, pt., G. Thoms., Opusc. Ent., 1875, p. 691.

Elysii, J. Thomson, Ann. Soc. Ent. Fr., (3 s.) iv, 1856, p. 337, t. 9, f. 2 : Gehin, Cat., p. 35.
Hab. E. China.

gemmifer, Fairmaire, Bull. Soc. Ent. Fr., (6 s.) vii, 1887, p. xxvii ; Ann. Soc. Ent. Belg., xxxi, 1887, p. 91.
Hab. Yunnan.

Lafossei, Feisthamel, Ann. Soc. Ent. Fr., 1845, p. 103, t. 2, f. 2 : Gehin, Cat., p. 35.
var. *coelestis*, Steuart, Ann. Soc. Ent. Fr., (3 s.) iii, 1855, p. 75, t. 7, 1 : Kraatz, Deutsche Ent. Zeits., xxx, 1886, plate, f. 8, ♀.
Hab. N. China, Shanghai, Canton *(Putzeys)* [*Ind. Mus.*, China].

pustulifer, (*Carabus*), Lucas, Bull. Soc. Ent. Fr., (4 s.) ix, 1869, p. x ; *ib.*, (5 s.), ii, 1872, p. 293, t. 14, f. 12, ♂ : Gehin, Cat., p, 35, t. 10.
Hab. N. Tibet, Moupin.

taliensis, Fairmaire, Le Nat., viii, 1886, p. 223 : Ann. Soc. Ent. Fr., (6 s.), vi, 1886, p. 308.
Hab. Yunnan.

Genus **DAMASTER.**

Kollar, Ann, Wien Mus., i, 1836, p. 333 : Lacord., Gen. Col., i, p. 61 : Mun. Cat., p. 77 : Lewis, Ent. Mon. Mag., xvii, 1880, p. 159 : Gehin, Cat. Carab., p. 36 : Horn, Gen. Carab., p. 108.

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Fortunei, G. Thomson, Opusc. Ent., 1875, p. 657.
viridipennis, Lewis, Ent. Mon. Mag., xvii, 1880, p. 159.
var. { *Fortunei*, Adams, Ann. Mag. N. H., (3 s.) viii, 1861, p. 59 : Bates Trans. Ent. S. Lond., 1873, p. 230 : Lewis, *ib.*, 1882, p. 524.
{ *oxuroides*, Schaum, Ann. Soc. Ent. Fr., (4 s.) ii, 1862, p. 68, t. 2, f. 1.
„ *Lewisii*, Rye, Ent. Mon. Mag., 1872, p. 131.
„ *pandurus*, Bates, Trans. Ent. S. Lond., 1873, p. 230 ; *id.*, *l.c.*, 1883, p. 231 : Kolbe, Ent. Nach., xiii, 1887, p. 340.

Hab. Japan, Formosa [*Ind. Mus.*, ? loc.].

Genus **CALOSOMA**.

Weber, Obs. Ent., i, 1801, p. 20 : Latr., Hist. Nat. Crust. Ins., iii, 1802, p. 91 : Lacord., Gen. Col., i, p. 58 : Mun. Cat., p. 78 : Gehin, Cat. Carab., 1885, p. xxix, 56.

Aulacopterum, Gehin, Cat., p. xxxiv, 67.
Blaptosoma, Gehin, 1876 ; Cat., p. xxxiii, 65.
Calamata, Motsch., Bull., Mosc., xxxviii (4), 1865, p. 307 ; Gehin, Cat., p. 59.
Callipara, Motsch., *l. c.*, p. 308 : Gehin, Cat., p. 57.
Callisphaena, Motsch., Et. Ent., 1859, p. 127 : Gehin, Cat., p. 68.
Callisthenes, Fischer, Lettre à Pander, 1821, p. 10 : Gehin, Cat., p. xxxv, 68.
Callistrata, Motsch., Bull. Mosc., *l. c. supra.*, p. 306 : Gehin, Cat., p. 62.
Callistriga, Motsch., *l.c.*, p. 307 : Gehin, Cat., p. xxx, 58.
Callitropa, Motsch., *l. c. supra*, p. 300 : Gehin, Cat., p. xxxii, 63.
Calodrepa, Motsch., *l. c.*, p. 310 : Gehin, Cat., p. 56.
Calopachys, Haury, Le Nat., 1880, p. 164 : Gehin, Cat., p. xxxiv, 67.
Camedula, Motsch., *l. c. supra*, p. 304 : Gehin, Cat., p. xxx, 59.
Caminara, Motsch., *l. c.*, p. 303 : Gehin, Cat., p. xxx, 59.
Campalita, Motsch., *l. c.*, p. 304 : Gehin, Cat., p. xxxii, 62.
Carabosoma, Gehin, 1875 ; Cat., p xxxii, 63.
Cathoplius, G. Thoms., Opusc. Ent., 1875, p. 628 : Gehin, Cat., p. xxxv, 70.
Castrida, Motsch., Bull. Mosc., *l. c. supra*, p. 300 : Gehin, Cat., p. 58.
Charmosta, Motsch., *l. c.*, p. 301 : Gehin, Cat., p. xxxi, 61.
Chrysostigma, Kirby, Faun. Bor. Amer., iv, 1837, p. 18 : Gehin, Cat., p. xxxiv, 67.
Cosmoplata, Motsch., Bull. Mosc., *l. c. supra*, p. 305 : Gehin, Cat., p. 61.
Ctenosta, Motsch., *l. c.*, p. 306 : Gehin, Cat., p. xxxii, 59.
Cychrocephalus, Gehin, 1876 ; Cat., p. 70.
Eutelodontum, Gehin, Bull. Soc. Ent. Fr., 1882, p. cxxxii ; Cat., p. xxxiii, 66.

chinense (*Charmosta*), Kirby, Trans. Linn. S. Lond., xii, 1818, p. 379 : Gehin, Cat., p. 61.

var. *aeneum*, Motsch., Bull. Mosc., xxxii (4), 1859, p. 481.
Hab. China, Canton, Japan, India, Ceylon [*Ind. Mus.*, Sahibganj, Calcutta].

himalayanum, R. Gestro, Ann. Mus. Civ. Gen., vii, 1875, p. 851 : Gehin, Cat., p. 57.
Hab. N. W. Himálaya, Ladák.

indicum (*Ctenosta*), Hope, Gray's Zool. Misc., 1831, p. 21 : Gehin, Cat., p. 61.
Hab. Nepál.

investigator, Illiger., Käfer Preuss., i, 1798, p. 142 : Schaum, Naturg. Ins., i (i), p., 114 : *(Charmosta)* Motsch., Bull. Mosc., xxxviii (4), 1865, p. 301 · Gehin, Cat., p. 61.

sericeum, Sturm, Ins. Deutschl., iii, 1815, p. 130, t. 66, f. *a* : Dejean, Spec. ii, p. 206 ; Ic., ii, t. 71, f. 2.

var. *caspium*, Fischer, Ent. Imp. Russ., iii, 1826, p. 236, t. 8, f. 5, 6.
,, *dauricum*, Motsch., Ins. Sib., 1844, p. 119, t. 4, f. 9 ; Bull. Mosc., xxxviii (4), p. 303.
„ *leptophyum*, Fischer, Ent. Imp. Russ., iii, 1826, p. 239, t. 8, f. 4.
,, *lugubre*, Motsch., Ins. Sib., 1844, p. 121.
„ *rugulosum* Motsch., Ins. Russ., 1846, note 2.
„ *russicum*, Fischer, Ent. Imp. Russ., iii, 1826, p. 238, t 8, f. 2.
,, *sibiricum*, Motsch., Ins. Sib., 1844, p. 121 ; Bull. Mosc., xx (3), 1847. p. 226.
? *sericeum*, Gebler, Ledeb. Reise, iii, 1830, p. 58 (*nec* Fabr).
Hab. Prussia, S. Russia, Siberia [*Ind Mus.*, Kashmir, Srinagar].

lugens *(Charmosta)*, Chaudoir, Ann. Soc. Ent. Fr., (4s.) ix, 1869, p. 372 : Gehin, Cat., p. 61.
var. *Davidis*, Gehin, Cat. Carab., 1885, p. 61.
Hab. N. China, Fuchau.

nigrum *(Charmosta)*, Parry, Trans. Ent. S. Lond., iv, 1845, p. 85 : Gehin, Cat., p. 62.
var. *scabripenne*, Chaudoir, Ann. Soc. Ent. Fr., (4s.) ix, 1869, p. 371.
Hab. Assam, N. India.

orientale *(Ctenosta)*, Hope, Trans. Zool. S. Lond., i, 1833, p. 92 : ? Chaudoir, Ann. Soc. Ent. Fr., (4s.) ix, 1869, p. 368 : Gehin, Cat., p. 61.
Hab. India, Poona [*Ind Mus.*, Sind Valley, Kogyar].

parallelum *(Campalita)*, Motsch., Ins. Sib., 1844, p. 123, t. 4, f. 4 : Gehin, Cat., p. 63.
Hab. Kirgisia, India [*Ind Mus.*, Kashmir, Srinagar].

squamigerum *(Ctenosta)*, Chaudoir, Ann. Soc. Ent. Fr., (4s.) ix, 1869, p. 369 ; Gehin, Cat., p. 60.
Hab. Bengal, Coimbatore (Madras).

thibetanum Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 92.
Hab. Moupin, N. Tibet.

HILETINI :—
Lacordaire, Gen. Col., i, 1854, p. 47 : Chaudoir, Bull. Mosc., xxxiv (i). 1861, p. 506 : Horn, Gen. Carab., p. 110.

Genus **HILETUS.**

Schiödte, Kröyer's Tidskr., (2 s.) ii, 1847, p. 346 : Lacord., Gen. Col., i, p. 48 : Mun. Cat., p. 46.
Camaragnathus, Bocandé, Mag. Zool., 1845, p. 4, t. 163-4 ; Rev. Mag. Zool., (2 s.) i. 1849, p. 460.

sumatrensis, Oberthür, Notes Leyden Mus., v, 1883, p. 215.
Hab. E, Sumatra, Serdang.

ELAPHRINI :—
Lacord., Gen. Col., i, 1854, p. 43 : Chaud., Bull. Mosc., xxxiv (1), 1861, p. 524 : Horn, Gen. Carab., p. 110 : Leconte & Horn, Class. Col., p. 10.

Genus **ELAPHRUS.**

Fabricius, Syst. Ent., 1775, p. 227 ; Syst., Eleuth., i, 1801, p. 245 : Latr. Hist. Nat. Ins., iii., 1802, p. 82 : Lacord., Gen. Col., i, p. 44 : Mun. Cat., p. 44.

Davidis, Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 89.
Hab. Yunnan.

NEBRIINI:—
Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 504 : Horn, Gen. Carab., p. 112 : Leconte & Horn, Class. Col, p. 12.

Genus **OPISTHIUS.**

Kirby, Faun. Bor. Amer., iv, 1837, p. 60 : Lacordaire, Gen. Col., i, p. 45 : Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 505 ; Mun. Cat., p. 47.

indicus, Chaudoir, Ann. Soc., Ent., Fr. (4 s) iii, 1863, p. 449.
Hab. N. India.

Genus **NOTIOPHILUS.**

Dumeril, Zool. Analyt., 1806, p. 194 : Lacord., Gen. Col., i, p. 43 : Mun. Cat., p. 43 : Bates, Biol. Centr. Amer., Col., i (i), p. 19.

acuticollis, Putzeys, Mém. Liège, 1866, p. 164.
Hab. N. China, ? Shanghai.

orientalis, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 428.
Hab. India, Simla.

Genus **LEISTUS.**

Frölich, Naturf., xxviii, 1794, p. 9 ; Clairv., Ent. Helv., ii, p. 146, t. 23 : Lacord, Gen. Col., i, p. 52 : Mun. Cat., p. 54.
Pogonophorus, Latreille, Hist. Nat. Ins., iii, 1802, p. 88 ; Gen. Crust., i, p. 223.

angulicollis, Fairmaire, Le Nat., 1886, p. 223 ; *id.*, Ann. Soc. Ent. Fr., (6s) vi, 1886, p. 307.
Hab. Yunnan.

Genus **NEBRIA.**

Latreille, Hist. Crust. & Ins., iii, 1802, p. 89 : Clairv., Ent. Helv., ii, 1806, p. 140, t. 22 : Lacord., Gen. Col., i, p. 50 : Mun. Cat., p. 47.
Alpaeus, Bonelli, Mém. Acad. Turin, 1809, p. 68.
Helobia (Leach), Stephens, Ill. Brit. Ent., iii, 1827, t. 103.

Chaslii, Fairmaire, Le Nat., viii, 1886, p. 223 : Ann. Soc. Ent. Fr., (6 s.) vi, 1886, p. 306.
Hab. China, Kiangsi.

chiuensis, Bates, Ent. Mon, Mag., ix, 1872, p. 52; Trans. Ent. S. Lond., 1873, p. 236 : Fairm. Ann. Fr., *l. c. supra*, p. 306.
Hab. Yangtse Valley in China, Japan.

Desgodinsii, Oberthür, Nov. Col., i, 1883, p. 47.
Hab. Darjiling.

lividipes, Fairmaire, Le Nat., viii, 1886, p. 223 ; Ann. Fr. *l. c. supra*, p. 306.
Hab. China, Kiangsi.

pulcherrima, Bates, Trans. Ent. S. Lond., 1873, p. 236 : Fairmaire, Ann. Soc. Ent. Belg.., xxxi, 1887, p. 90.
Hab. Yangtse Valley, Japan, Kiangsi.

xanthacra, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 423.
Hab. India, Simla.

ENCELADINI :—
Horn, Gen. Carab., p. 118.

Genus **LUPERCA**.

Lap. de Casteln.., Hist. Nat. Ins. Col., i, 1840, p. 63 : Lacord., Gen. Col., i, p. 163 : Mun. Cat., p. 162.
Holoscelis, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 438 ; *id.*, 50 (i), 1876, p. 71.

laevigata, *(Carabus)*, Fabr., Spec. Ins., i, 1781, p. 304 ; Ent. Syst., i, p. 143 ; Syst. Eleuth., i, p. 124 : Oliv., Ent., iii 36, p. 7, t. 2, f. 18 : Herbst., Natursyst. Ins., Käfer. x, p. 256, t. 175, f. 6 ; Lacordaire, Gen. Col., Atlas, t. 6, f. 1 : (*Enceladus*) Dejean, Spec., v, p. 474 : Chaudoir, Bull. Mosc., 50 (i), 1876, p. 74 : Dohrn, Stettin. Ent. Zeit., 1881, p. 309.
herculanea, Lap. de Casteln., Et. Ent., i, 1834, p. 151.
Hab. India, Bengal [*Ind. Mus.*, Ceylon.]

SCARITINI :—
Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xxii, 1879, p. 124 ; xxiii, 1880, p. 5 : Horn, Gen. Carab., p. 119 : Leconte & Horn, Class. Col., p. 16.
Dr. Horn divides the tribe, so far as he deals with it, into two sections which he names *Scarites (Pasimachus* and *Scarites)*, and *Clivinæ (Dyschirius, Clivina, Ardistomis)*. Others make four sections, of which the genera occurring in the Oriental Region are :—

Pasimachina :—*Mouhotia.*

Scaritina :—*Oxylobus, Haplogaster, Scaritoderus, Coptolobus, Distichus, Scarites.*

Scapterina :—*Scapterus, Thlibops, Systenognathus, Oxygnathus, Dacca.*

Clivinina :—*Dyschirius, Clivina, Coryza, Ancus, Ardistomis*, (Putzeys, Rév. Gen., Ann. Soc. Ent. Belg., x, 1866, p. 1),

Genus **MOUHOTIA**.

Lap. de Casteln., Rev. Mag. Zool., xiv, 1862, p. 305 : Mun. Cat., p. 180.

convexa, Lewis, Ent. Mon. Mag., xix, 1883, p. 193 : Waterhouse, Aid, t. 129, f. 1
Hab. Laos.

gloriosa, Lap. de Casteln., Rev. Mag. Zool., 1862, p. 306: Lucas, Bull. Soc. Ent. Fr., (5 s) vii, p. clxxiii.
Midas, Schaum, Proc. Ent. S. Lond., 1862, p. 94.
Hab. Laos.

Genus **OXYLOBUS.**

Chaudoir, Bull. Mosc, xxviii (i), 1855, p. 5; *id.*, *Monograph*, Ann. Soc. Ent. Belg. xxii, 1879, p. 129 : Mun. Cat., p. 181.

alveolatus, Chaudoir, Mon. *l. c.*, p. 134.
Hab. India.

asperulus, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 58 : *Mon.*, p. 133.
Hab. Ceylon.

costatus, Chaudoir, *Mon.*, p. 134.
Hab. Malabar, Colombo *(Bates)*.

designans *(Scarites)*, Walker, Ann. Mag. N. H., (3 s) ii, 1858, p. 203 : Bates, *l. c.*, (5 s) xvii, p. 210.
? = *sculptilis*, Westwood, *q. v.*
Hab. Ceylon.

foveiger, Chaudoir, *Mon.*, p. 133.
Hab. India.

lateralis *(Scarites)*, Dejean, Spec., i, 1825, p. 400 ; Chaud., Bull. Mosc., xxviii (i), 1855, p. 8; *id.*, *Mon.*, p. 131.
Hab. India, Coromandel.

punctatosulcatus, Chaudoir, Bull. Mosc., xxviii (i), 1855, p. 6; *Mon.*, p. 131.
Hab. Nepal.

quadricollis, Chaudoir, Bull. Mosc., *l. c.*, p. 7; *Mon.*, p. 130.
Hab. India, Nilgiris, Colombo (Bates).

sculptilis, Westwood, Arc. Ent., i, 1843, p. 33, t. 23, f, 1 : Chaudoir, *Mon.*, p. 133.
Hab. India, Coromandel [*Ind. Mus.*, Utakamand.].

Genus **HAPLOGASTER.**

Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xxii, 1879, p. 149.

humeralis, Putzeys, Chaudoir, *Mon.*, *l. c.*, p. 151.
Hab. Madras.

ovatus, Chaudoir, *Mon.*, *l. c.*, p. 150.
Hab. N. India.

Genus **SCARITODERUS.**

Fairmaire, Bull. Soc. Ent. Fr., (6 s.) iii, 1883, p. lv, note.
Anomoderus, Chaudoir, Ann. Soc. Ent. Belg., xxii, 1879, p, 156 (*nom. praeoc.*).
Anomophaenus, Fauvel, Rev. d'Ent., i, 1882, p. 229 (*nom. praeoc.*).
Loyolae, Fairmaire, *l.c. supra*, p. lv.
Hab, India, Ramnad.

Genus **COPTOLOBUS.**

Chaudoir, Bull. Mosc., xxx (3), 1857, p. 59; *id.*, *Monograph*, Ann. Soc. Ent. Belg., xxii, 1879, p. 159 : Mun. Cat., p. 182.

Anodon, Chaudoir, *Mon.*, *l.c.*, p. 160.
Hab. Ceylon.

glabriculus, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 60; *Mon.*, *l.c.*, p. 162 : Mun. Cat., p. 182.
? *obliterans* (*Scarites*), Walker, Ann. Mag. N. H., (3 s.) ii, 1858, p. 203.
? *subsignans* (*Scarites*), Walker, *l.c.*, p. 203.
Hab. Ceylon, Nuwara Eliya, Horton Plains (*Bates*), Canton (*Putzeys*).

Omodon, Chaudoir, *Mon.*, *l. c.* p. 161.
Hab. Ceylon, Colombo (Bates).

taprobanae, Chaudoir, *Mon.*, *l.c.*, p. 161.
Hab. Ceylon, Colombo, (*Bates*).

Genus **DISTICHUS.**

Motschulsky, Et. Ent., 1857, p. 96 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xxiii, 1880, p. 44 : Bates, Biol. Centr. Amer., Col., i (i), p. 30.
Scarites, pt., Bonelli, Dejean *auct.*
Taeniolobus, pt., Chaudoir, *olim.*

dicaelus, Chaudoir, *Mon.*, Ann. Soc. Ent. Belg., xxiii, 1880, p. 52.
Hab. Singapur.

lucidulus, Chaudoir, *Mon.*, *l.c.*, 57.
Hab. Dekhan, Rangoon, Siam.

modestus, Chaudoir, *Mon. l.c.*, p. 57.
Hab. India.

picicornis (*Scarites*), Dejean, Spec., v, 1831, p. 493 : Chaudoir, *Mon.*, *l. c.*, p. 56.
troglodytes, Erichson, Wiegm. Arch., 1843, p. 214.
? var. *minor*, Nietner, Journ. As. Soc. Beng., xxv, 1856, p. 389 : Ann. Mag N. H., (2 s.) xix, 1857, p. 244.
Hab. Ceylon, Colombo, Dekhan, W. Africa, Zanzibar.

planus (*Scarites*), Bonelli, Mém. Acad. Turin., 1813, p. 470 : Dejean, Spec., i, p. 395; *id.*, Ic. Col. Eur., i, t. 21, f. 3 : Klug, Symb. Phys., Dec. iii, t. 23, f. 5 : Chaudoir *Mon.*, *l.c. supra*, p. 53.
? *bisquadripunctatus* Klug, Peters Reise Mossamb., v. 1862, p. 158.
punctatostriatus, Redtenb, Russegger Reise., p. 979.
sexpunctatus, Ménétriés, Cat. Rais, i, 1832, p. 103.
var *nitidus*, Dejean, Spec. v. 1831, p. 484.
Hab. Mediterranean and Caspian regions, N. India.

puncticollis, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 47; *Mon.*, *l. c. supra*, p. 55
Hab. N. India.

striaticeps, Chaudoir, *Mon.*, *l. c.*, p. 52.
Hab. India.

Genus **SCARITES.**

Fabricius, Ent. Syst., i, 1792, p. 94; Syst. Eleuth., i, p. 123 (*Attelabus*, DeGeer, *nec* Linn.): Lacord., Gen. Col., i, p. 194: Schmidt Goebel, Faun. Col. Birm., p. 93: Mun. Cat. p. 184: Chaudoir, Bull. Mosc., xxvii (i), 1854, p. 5; *id.*, *Monograph*, Ann. Soc. Ent. Belg., xxiii, 1880, p. 63: Motschulsky, Et. Ent., 1857, p. 93.

Broscomorphus, Motsch., Et. Ent., 1857, p. 96: Chaud., Mon., p. 66.
Glyptomorphus, Motsch., *l. c.*, p. 95.
Harpalites, Motsch., *l. c.*, p. 95; Chaud., *Mon.*, p. 67.
Parallelomorphus, Motsch., *l.c.*, p. 96: Käf. Russl., 1850, t. v: Chaud., *Mon.* p. 65.
Paramecomorphus, Motsch., Et. Ent., 1857, p. 96: Chaud., *Mon* p. 65.
Scallophorites, Motsch., *l. c.*, p. 95: Chaud., *Mon.*, p. 67.
Stigmapterus, Motsch., *l.c.*, p. 95.
Taeniolobus, pt, Chaudoir, *olim*: Mun. Cat., p. 183.

acutidens, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 98; *id.*, *Mon.*, p. 83.
Hab. E.coast China, Chusan.

barbarus, Dejean, Spec., i, 1825, p. 388: Chaud., *Mon.*, p. 96.
Hab. India, Dekhan.

bengalensis, Dejean, Spec., ii, 1826, p. 468: Chaud., Bull. Mosc., xxvii (i), 1855, p. 79; *id*, *Mon.* p. 89.
Hab. N. India, Bengal.

Boysii, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 57; *Mon.*, p. 107.
Hab. N. India.

capito, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 92, 108; *Mon.*, p. 95.
?= *Selene*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 94 [descr. incomp.].
Hab. Burma, Rangoon, N. India.

ceylonicus, Chaudoir, *Mon.*, p. 85.
Hab. Ceylon, Galle, Colombo (Bates).

cycloderus, Chaudoir, *Mon.*, p. 112.
Hab, India.

denticulatus, Chaudoir, *Mon.*, p. 98.
Hab. Cochinchina.

dyschromus, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 78; *id*, *Mon.*, p. 82.
Hab. N. India.

estriatus, Fairmaire, Ann. Soc. Ent. Belg., 1887, p. 93.
Hab. China, Fukien.

Geryon, Hope, Gray's Zool. Misc., 1831, p. 21: ? MacLeay, Trans. Ent. Soc. N. S. Wales, i, 1863, p. 68 (Australia.)
Hab. Nepal.

inconspicuus, Chaudoir, Bull. Mosc., *l. c. supra*, p. 82; *Mon*, p. 97.
Hab. N. India [*Ind Mus.*, Jhelam Valley.].

indus, Olivier, Ent., iii, 36, 1795, p. 9, t. 1, f 2 *a-b*: Dejean, Spec., i, p. 395: MacLeay, Annul. Javan., p. 35: Chaud., *Mon.*, p. 102.
Hab. India, Ceylon, Colombo [*Ind. Mus.*, Bengal, Tínpahár, Sáhibgunj?].

liopterus, Chaudoir, *Mon.*, p. 87.
Hab. N. India.

longiusculus, Chaudoir, *Mon.*, p. 86.
Hab. Philippines.

mancus, Bonelli, Mém. Acad. Turin, 1813, p. 473 : Dejean, Spec., i, p. 394 ; Chaudoir, *Mon.*, p. 102.

Hab. India, Java, Philippines.

opacus, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 88 ; *id.*, *Mon.*, p. 103.
?=*parvus*, Wiedemann, Zool. Mag., ii (i), 1823, p. 37.
Hab. N. India, Bengal.

orthomous, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 55 ; *id.*, *Mon.*, p. 88.
Hab. Himálaya.

pacificus, Bates, Trans. Ent. S. Lond., 1873, p. 238 : Chaud., *Mon.*, p. 101.
Hab. Formosa, Japan.

parallelus, Dejean, Spec., i, 1825, p. 382 : Chaudoir, *Mon.*, p. 86.
Hab. Java.

praedator, Chaudoir, *Mon.*, p. 97.
Hab. Burma, Rangoon.

punctum, Wiedemann, Zool. Mag., ii (i), 1823, p. 38 : Chaudoir, *Mon.*, p. 127.
Hab. Bengal.

semicircularis, MacLeay, Annul. Javan, 1825, p. 24 : Chaudoir, *Mon.*, p. 127.
?=*punctum* Wiedemann, *q.v.*
Hab. Java

semirugosus, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 90 ; *Mon.*, p. 82.
rugipennis, Chaudoir, Bull. Mosc., *l.c.*, p. 82.

Hab. Bengal, Bangkok, Philippines.

similis, Chaudoir, *Mon.*, p. 83.
Hab. ? E. Asia.

subnitens, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 87 ; *Mon.*, p. 103.
Hab. N. India.

subproductus, Chaudoir, *Mon.*, p. 90.
Hab. Siam, Bangkok.

sulcatus, Oliv., Ent. iii, 36, 1795, p. 7. t. 1, f. 11 ; Dejean, Spec., i. p. 375 : Chaud., *Mon.*, p. 80.
chinensis, Erichson, Nova Acta Leop. Carol. Nat., xvi, Supp. i, 1832, p. 220.
Hab. India, Macao, Formosa [*Ind. Mus.*, Sikkim, Assam ?].

Genus **SCAPTERUS.**

Dejean, Spec., ii, 1826, p. 471 : Lacord., Gen. Col., i, p. 197 : Mun. Cat., p. 188. Putzeys, Révision Clivinides, Ann. Soc. Ent. Belg., x, 1866, p. 7.

figuloides, R. Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 301, fig.
Hab. Burma.

Guerinii, Dejean, Spec., ii, 1826, p. 472 ; Icon. Col. Eur., i, t. 22, f. 3 : Guérin, Ic. Règne Anim., t. 5, f. 3 *a* : Gray, Griffith Anim. Kingd., Ins. ii, 1832, t. 8, f. 3.
Hab. India.

riparius, R. Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 299, fig.
Hab. Burma, Minhla.

sulcatus, Putzeys, Mém. Roy. Soc. Liège, Postscr., 1863, p. 17 : ? Chaudoir, Rev, Mag. Zool. (2 s.), xv, 1863, p. 117.
Hab. N. E. India [*Ind. Mus.*, Sibságar, Assam].

Genus **THLIBOPS.**

Putzeys, Ann. Soc. Ent. Belg., x, 1866, p. 9 : Mun. Cat., p. 188.

crenata, Chaudoir, Rev. Zool. (2 s.), xv, 1862, p. 118.
Hab. Cochin China.

Dohrnii, Chaudoir, *l. c.*, p. 118.
Hab. Java.

puncticollis, R. Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 302.
Hab. Burma.

Genus **OXYGNATHUS.**

Dejean, Spec., ii, 1826, p. 473 ; Icon. Col. Eur ., i., t. 22. f. 5 : Lacord., Gen. Col., i, p. 198 : Mun. Cat., p. 190.

elongatus (*Scarites*), Wiedemann, Zool. Mag., ii (i), 1823, p. 38 : Dejean, Spec., ii, p. 475.
Hab, India.

Genus **DACCA.**

Putzeys, Mém. Liège, Postscr., 1862, p. 68 : Mun. Cat., p. 191.

forcipata, Putzeys, *l.c.*, p. 68, t. 1, f. 41.
Hab. India.

Genus **SPAROSTES.**

Putzeys, *Révision*, Ann. Soc. Ent. Belg., x, 1866, p. 27 : Mun. Cat., p. 192.

brevicollis, Putzeys, *l.c.*, p. 27.
Hab. N. China, ? Canton.

striatulus, Putzeys, *l. c.*, p. 29.
Hab. India, Siam.

Genus **DYSCHIRIUS,**

Bonelli, Mém. Acad. Turin., 1813, p. 483 : Lacord., Gen. Col, i, p. 202 : Mun. Cat., p. 193 : Putzeys, *Monograph* Mém. Liège., ii, sep. 1846, p. 4 ; *id.*, Révision générale, Ann. Soc. Ent. Belg., x, 1866, p. 32 ; Suppt., *ib.*, xi, 1868, p. 7 ; xvi, 1873, p. 10.
Acephorus, Leconte, Ann. Lyc. Nat. Hist., New York, v, 1851, p. 194.
Phreoryctes, Schmidt Goebel, Faun. Col. Birm., 1846, t. 3, f. 6.
Reicheia, Saulcy, Ann. Soc. Ent. Fr., (4 s) ii, 1862, p. 285 : Putzeys, *l. c.*, p. 39 : Mun. Cat., p. 193.
Spelaeodytes, Müller, Wien. Ent. Monats., vii, 1863, p. 28.

binodosus, Putzeys, C. R. Ent. Belg., xxi, 1878, p. clxxiii.
Hab. Calcutta.

daimiellus, Bates, Trans. Ent. S. Lond., 1873, p. 241.
Hab. Yangtse Valley, Japan, Nagasaki.

debilis, Schmidt Goebel, Faun. Col. Birm., 1846, t. 3, f. 6: Putzeys, *Rév.*, Ann. Soc. Ent. Belg., x, 1867, p. 97; *id.*, C. R. Ent. Belg, 1878. p. clxxiv.
interpunctatus, Putzeys, *Rév. l.c.*, p. 97.
pusillus (*Phreoryctes*), Schmidt Goebel: Putzeys, *Rév.*, p. 97. (*nec.* Dejean).
Hab. Burma, N. India.

Doriae, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 14.
Hab. Borneo, Sarawak.

fusus, Putzeys, C. R. Soc. Ent. Belg., xxi, 1878, p. clxxii.
Hab. Calcutta.

hispidulus, Putzeys, *Rév.*, *l.c.*, p. 98.
Hab. Siam.

impunctatus, Putzeys, Ann. Soc. Ent. Belg., xi, 1868, p. 10.
? = *debilis*, Schmidt Goebel, *q. v.*
Hab. Siam, Bangkok.

indicus, Putzeys, *Rév.*, *l. c.*, p. 91.
Hab. N India.

nitens, Putzeys, C. R. Ent. Belg., xxi, 1878, p. clxxiii.
Hab. Calcutta.

ordinatus, Bates, Trans. Ent. S. Lond., 1873, p. 240.
Hab. Japan, Ceylon, Kandy.

orientalis, Putzeys, *Rév.*, p. 92: Bates, Trans. Ent. S. Lond., 1873, p. 241.
Hab. Hongkong, Japan.

ovicollis, Putzeys, Ann. Soc. Ent. Belg., 1873, p. 14.
Hab. Shanghai.

porosus, Putzeys, C. R. Soc. Ent. Belg., xx, 1877, p. xl.
Hab. Burma.

rugifer, Putzeys, *l.c.*, C. R., 1878, p. clxxiii.
Hab. Calcutta.

Schmidtii, Putzeys, *l.c.* 1877, p. xli.
Hab. Calcutta.

stenoderus, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 13.
Hab. Shanghai.

verticalis, Putzeys, *l.c.* C. R., 1878, p. clxxii.
Hab. Calcutta.

Genus **CLIVINA.**

Latreille, Consid. génér., 1810, p. 156: Lacord., Gen. Col., i, p. 204: *Monographi*, Putzeys, Mém. Liège, ii, 1846; *Révision générale*, *id.*, Ann. Soc. Ent. Belg., x., 1866, p. 107: Mun. Cat., p. 198: Horn, Gen. Carab., p. 121: Bates, Biol. Centr. Amer., Col., i (i), p. 32.

Eupalamus, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 101.

advena, Putzeys, *Révision*, 1866, p. 123.
Hab. India.

agona, Putzeys, *Révision*, 1866, p. 131.
Hab. Siam.

anceps, Putzeys, Mém. Liège., Postscr., 1862, p. 50 ; *id.*, *Révision*, p. 124.
Hab. India, Dacca.

angularis, Putzeys, *Révision*, 1866, p. 122.
Hab. India.

assamensis, Putzeys, *Mon.*, Mém. Liège, ii, 1846, p. 584, sep. p. 66 ; *id.*, Postscr., p. 35 ; *Révision*, p. 108.
Hab. Assam.

attenuata, Herbst, Natursyst. Ins., Käfer, x, 1806, p. 264, t. 176, f. 7 : Putzeys, *Révision*, p. 110.
melanaria, Putzeys, *Mon.*, 1846, p. 586, sep., p. 68.
picipes, Bonelli, Mém. Acad. Turin, 1813, p. 481 : Dejean, Spec., i, p. 416: Putzeys, Mém. Liège, 1846, p. 623 ; *id.*, Postscr,, 1863, p. 51.
Hab. India, Bengal, Assam.

bengalensis, Putzeys, *Mon.* 1846, p. 603, sep., p. 85 ; *id.*, *Révision*, p. 137.
Hab. Bengal.

brevior, Putzeys, *Révision*, 1866, p. 126.
Hab. Burma, Rangoon.

brunnescens, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 101.
Hab. Ceylon.

capitata, Putzeys, *Révision*, 1866, p. 122.
Hab. India.

castanea, Westwood, Proc. Zool. S. Lond., 1837, p. 128 : Putzeys, *Révision*, p. 131, note.
Hab. Philippines, Manilla.

cordicollis, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 102.
Hab. Ceylon.

divaricata, Putzeys, *Révision*, 1866, p. 122.
Hab. India. [*Ind. Mus.*?]

dolens, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 15.
Hab. Shanghai.

elongatula, Nietner, Journ. As. Soc. Beng., xxv, 1856, p. 390: Ann. Mag. N. H., (2 s.) xix, 1857, p. 245 : Putzeys, *Révision*, p. 123.
Hab. Ceylon, Colombo.

extensicollis, Putzeys, *Mon.* 1846, p. 601 ; *id.*, *Révision*, p. 115.
Hab. Java.

foveicollis, Putzeys, Mém. Liège, Postscr. 1863, p. 61 ; *id.*, *Révision*, p. 133.
Hab. China.

fulvaster, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 101.
Hab. Ceylon.

grammica, Putzeys, C. R. Soc. Ent. Belg., xx, 1877, p. xi.
Hab. Calcutta.

Helferi, Putzeys, *Révision*, 1866, p. 126.
Hab. India.

humeralis, Putzeys, Mém. Liège, Postscr. 1863, p. 48 ; *id.*, *Révision*, p. 125.
Hab. Sumatra.

humilis, Morawitz, Beitr. Käfer-fauna Ins. Jesso, i, 1863, p. 22 : Bates, Trans. Ent. S. Lond., 1873, p. 238.
vulgivaga, Bohemann, Freg. Eug. Resa, Col., 1858, p. 9.
Hab. China, Hongkong, Yangtse Valley, Japan.

hydropica, Putzeys, *Révision*, 1866, p. 121.
Hab. N. India [*Ind. Mus.*— ?].

indica, Putzeys, *Mon.*, 1846, p. 535, sep., p. 69 ; *id.*, Postscript, p. 35 : Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 72.
rugosifrons, Nietner, Journ. As. Soc. Ben., xxv, 1856, p. 390 : Ann. Mag. N. H., (2s.) xix, 1857, p. 245.
Hab. Ceylon, Colombo, N. India, Dekhan.

javanica, Putzeys, *Mon.*, 1846, p. 529, sep., p. 74 ; *id*, *Révision*, p. 124.
Hab. Java.

lata, Putzeys, *Révision*, 1862, p. 131 : Bates, Trans. Ent. S. Lond., 1876, p. 3.
Hab. India.

lobata, Bonelli, Mém. Acad. Turin., 1813, p. 481 : Dejean, Spec., i. p. 414 : Putzeys, *Mon.*, p. 599, sep., p. 81 ; *id.*, *Révision*, p. 120.
Hab. Bengal.

marginicollis, Putzeys, *Révision*, 1866, p. 133.
Hab. India.

memnonia, Dejean, Spec., v. 1831, p. 503 : Putzeys, *Mon.*, sep., p. 70 ; *id.*, *Révision*, p. 108.
Hab. Java.

moerens, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 15.
Hab. Shanghai.

mordax, Putzeys, Mém. Liège, Postscr., 1862, p. 67 : *Révision*, p. 133.
Hab. India.

niponensis, Bates, Trans. Ent. S. Lond., 1873, p. 239.
Hab. Yangtse Valley, Japan.

Parryi, Putzeys, Mém. Liège, Postscr., 1862, p. 60 ; *id.*, *Révision*, p. 130 : Bates, Trans. Ent. S. Lond., 1873, p. 233 ; *ib.*, 1876, p. 3 ; *id.*, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 100.
clivinoides, Schmidt Goebel, Faun. Col. Birm., 1846, t. 3., f. 4.
Hab. India, Nilgiris, Bombay, Rangoon, Bhamo, Teintso, Ceylon, Colombo, Yangtse Valley, Japan.

pluridentata, Putzeys, C. R. Soc. Ent. Belg., xx, 1877, p. xlii.
Hab. Calcutta.

recta, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 203.
Hab. Ceylon.

rufipes, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 102 ; Putzeys, *Révision*, p. 134.
Hab. Ceylon, Colombo.

sabulosa, MacLeay, Annul. Javan., 1825, p. 24 : Putzeys, *Révision*, p. 119 note, 124.
Hab. Java.

semicarinata, Putzeys, C. R. Soc. Ent. Belg., xx, 1877, p. xliv.
Hab. Calcutta.

siamica, Putzeys, *Révision*, 1866, p. 124.
Hab. Siam.

striata, Putzeys, *Mon.*, 1846, p. 592, sep., p. 74 ; *Révision*, p. 110.
Hab. India, Coromandel.

stricta, Putzeys, Mém. Liège, Postscr., 1862, p. 49 ; *Révision*, p. 125.
Hab. Java.

sulcigera, Putzeys, *Révision*, 1866, p. 110.
Hab. Siam.

tranquebarica, Bonelli, Mém. Acad. Turin, 1813, p. 484.
Hab. India.

transversa, Putzeys, *Révision*, 1866, p. 125.
Hab. Siam.

unicolor, Herbst, Natursyst. Ins., Käfer, x, 1806, p. 265, t. 176, f. 9, *g*.
Hab. India.

Westwoodii, Putzeys, *Révision*, 1866, 109.
castanea, Putzeys, Mém. Liège, 1863, p. 35 (*nec* Westwood).
Hab. India, Ceylon, New Guinea.

Genus **CORYZA**.

Putzeys, Ann. Soc. Ent. Belg., x, 1866, p. 194 : Mun. Cat., p. 203.

cariniceps (Chaudoir), Putzeys, *l. c.*, x, 1866, p. 196.
Hab. N. India.

maculata (*Clivina*), Nietner, Journ. As. Soc. Beng., xxv, 1856, p. 391 : Ann. Mag. N. H., (2 s.) xix, 1857, p. 246 : Putzeys, Ann. Soc. Ent. Belg., x, p. 196.
Hab. Ceylon.

Neitnerii, Putzeys, *l.c.*, p. 196.
maculata, Putzeys, Mém. Liège, Postscr., 1862, p. 51 (*nec* Nietner).
Hab. India.

Genus **ANCUS**.

Putzeys, Ann. Soc. Ent. Belg., x, 1866, p. 197 : Mun. Cat., p. 204.

bicornutus, Putzeys, Mém. Liège, 1863, p. 45 ; *l.c. supra*, p. 198.
Hab. Siam.

Genus **ARDISTOMIS.**

Putzeys, Mém. Liège, ii, 1846, p. 636, sep., p. 118 ; *id.*, Ann. Soc. Ent. Belg., x, p. 200 : Lacord., Gen. Col., i. p. 206 : Mun. Cat., p. 204.

paradoxa, Putzeys, Ann. Soc. Ent. Belg., xi, 1868, p. 21.
Hab. Siam, Bangkok.

Genus **PSILUS.**

Putzeys, C. R. Soc. Ent. Belg., xx, 1877, p. xlvi.

acutipalpis, Putzeys, *l.c.*, p. xlvi.
Hab. Calcutta.

Sect. **HARPALINÆ BISETOSÆ**—Horn, Gen. Carab., 1881, p. 122 ; Leconte & Horn, Class. Col., p. 19.

PANAGAEINI :—Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 83 ; Horn, Gen. Carab., p. 126 ; Leconte & Horn, Class. Col., p. 22.

Genus **BRACHYONYCHUS.**

Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xxi, 1878, p. 86.
Epicosmus, pt, Chaudoir, *olim*.

Andersonii, Bates Journ. Linn. S. Lond., xxi, 1887, p. 135.
Hab. Mergui Archipelago (Elphinstone Island): [*Ind. Mus.* type].

humeratus (*Epicosmus*), Chaudoir, Rev. Mag. Zool., (2s,) xxi, 1869, p. 69 ; *Mon.*, p. 89.
Hab. Cochin China.

laevipennis, Chaudoir, *Mon*, p. 87.
Hab. Siam, Cochin China.

punctipennis, R. Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 305.
Hab. Laos.

sublaevis (*Epicosmus*), Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 67 ; *Mon.*, p. 89.
Hab. Cambodia, Cochin China.

Genus **EPICOSMUS.**

Chaudoir, Bull. Mosc., xvii, 1844, p. 512, note ; *id.*, *l.c.*, xxxiv (2), 1861, p. 335 ; Ann. Soc. Ent. Belg., xxi, 1878, p. 104.
Craspedophorus, pt, Hope, Col. Man., i. p. 9 : Lacord., Gen. Col., i, p. 210 : Murray, Schaum.
Eudema, pt., Lap. de Casteln. Hist. Nat. Ins. Col., i, 1840, p. 137 : Mun. Cat., p. 208.
Isotarsus, pt, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 217 ; Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 134.
Panagaeus, pt, Dejean *et auct.*

basifasciatus, Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 115 ; Ann. Soc. Ent. Belg., xxi, 1878, p. 127.
? = *Saundersii*, Chaudoir, *q.v.*
Hab. Laos, Cambodia.

Castelnauii, Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 112.
bifasciatus, Lap. de Casteln., Et. Ent., 1834, p. 155 (*nec Fabr.*) : Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 336.
Hab. India, Nilgiris, Coromandel, Colombo (Bates).

Feae, Gestro, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 101.
Hab. Burma, Bhamo, Teintso, Prome.

hexagonus, Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 338 ; *id.*, Ann. Soc. Ent. Belg., xxi, 1878, p. 114.
Hab. India [*Ind. Mus.*—?].

hilaris, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 221, ♂ : Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 345 ; *id.*, Ann. Soc. Ent. Belg., xxi, p. 110.
? geniculatus (*Panagaeus*), Wied., Zool. Mag., ii (i), 1823, p. 56 : Chaud., Ann. Belg., *l.c. supra*, p. 112.
rufipalpis, Laferté, *l.c. supra*, p. 221, ♀.
Hab. India, N. Bengal.

laticollis, Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 114 : Ann. Soc. Ent. Belg., xxi, p. 125.
Hab. Cambodia, Laos.

mandarinus (*Isotarsus*), Schaum, Ann. Soc. Ent. Fr., (3s.) 1853, p. 436 : Chaud., Ann. Soc. Ent. Belg., xxi, p. 113 : R. Gestro, Ann. Mus. Civ. Gen. xviii, 1882, p. 304.
Hab. Hongkong, Burma.

Mouhotii, Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 69 ; Ann. Belg., *l.c. supra*, xxi, p. 124.
Hab. Cambodia, Laos.

notulatus, Fabr., Syst. Eleuth., i, 1801, p. 201 : Schönherr, Syn. Ins., i, p. 209 ; Chaudoir, Ann. Belg., *l.c. supra*, p. 115.
elegans, Dejean, Spec. ii, 1826, p. 290 : Laferté, *l.c. supra*, p. 221 ; Schaum, Ann. Soc. Ent. Fr., (3s.) i, 1853, p. 432.
Hab. Bengal, Dekhan [*Ind. Mus.*].

pubiger, Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 337 : Ann. Belg., *l.c., supra*, p. 122.
Hab. India.

Saundersii, Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 114 ; Ann. Belg., *l.c. supra*, p. 125.
? basifasciatus, Chaudoir, *q. v.*
Hab. Cambodia.

Genus **EUDEMA**.

Lap. de Casteln., pt, Hist. Nat, Col., i. 1840, p. 137 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xxi, 1878, p. 133.
Pimelia & Carabus, Fabricius : *Isotarsus, pt*, Laferté : *Panagaeus*, Dejean, *& auct.*

angulatum, Fabr., Spec. Ins., i, 1781, p. 302 ; Mant. Ins., i, p. 197 ; Ent. Syst., i, p. 148 (*nec* Syst. Eleuth., i, p. 203) : Gmelin, ed., Syst. Nat., iv, p. 1963

Olivier, Ent., iii, 35, p. 38, t. 7, f, 7 6; id., Enc. Méth., Carab., No. 41: Schönherr, Syn. Ins., i, p. 166: Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 336 : Schaum, Ann. Soc. Ent. Fr., (3 s.) i, 1853, p. 431.

fasciatum (*Pimelia*), Fabr., Spec. Ins., i, p. 318; Mant. Ins., i, p. 209; Ent. Syst., i, p. 104 : Schönherr, Syn. Ins., i, p. 166 : ? Chaudoir, Bull. Mosc.xxxiv (2), 1861, p. 336 ; *id.*, *Mon. l. c. supra*, p. 133.

tomentosum (*Panagaeus*), Vigors, Zool. Journ., i, 1825, p. 557, t. 20, f. 1 : Dejean, Spec., ii, p. 284 : Schaum, Ann. Soc. Ent. Fr., (3s.) i, 1853, p. 431.

Hab. India, Nilgiris, Coromandel, Pondicherry [*Ind. Mus.*, Utakamand, Orissa, China].

sundaicum, Oberthür, Notes Leyden Mus., v, 1883, p. 221.
Hab. E. Sumatra, Serdang.

transversum (*Epicosmus*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 332.
Hab. India.

Genus **LOROSTEMMA.**

Motschulsky, Bull. Mosc., xxxvii (3), 1864 p. 329 : Mun. Cat., p. 212.
Lorostema, Motsch., *l. c. supra.*

alutacea, Motsch., *l. c. supra*, p. 330.
Hab. India, Tranquebar.

Genus **MICROCOSMUS.**

Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xxi, 1878, p. 139.
Craspedophorus, pt, Murray, Schaum.
Isotarsus, pt, Laferté.
Panagaeus, pt, Dejean & *auct.*

flavopilosus, Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 348 : Ann. Belg., *l. c. supra*, p. 142 : Bates, Trans. Ent. S. Lond., 1873, p. 243.
Hab. Bengal, Formosa, Japan.

Genus **DISCHISSUS.**

Bates, Trans. Ent. S. Lond., 1873, p. 243 : Chaud., Ann. Soc. Ent. Belg., xxi, 1878, p. 149 ; Rev. Zool., (3s.) vi, p. 86.
Panagaeus, MacLeay, Lap. de Castelneau : *Craspedophorus*, pt, Murray, Schaum : *Isotarsus*, pt., Laferté, Schaum.

borneensis, Frivaldsky, Term. füz., vi, 1883, p. 134.
Hab. Borneo.

cereus (*Panagaeus*), MacLeay, Annul. Javan., 1825, p. 12 : Chaud., Rev. Mag. Zool., (2s.) xxi, 1869, p. 116 ; Ann. Soc. Ent. Belg., xxi, 1878, p. 150.
? *versutus*, Lap. de Castelu., Et. Ent., 1834, p. 155.
Hab. Java.

guttiferus, Schaum, Ann. Soc. Ent. Fr., (3s.) i, 1853, p. 437 : Chaud., Ann. Soc. Ent. Belg., xxi, 1878, p. 151.
Hab. Java.

longicornis (*Craspedophorus*), Schaum, Berlin. Ent. Zeits., 1863, p. 84 : Chaud., Ann. Soc. Ent. Belg., p. 153.
Hab. Nilgiris, Hongkong, N. China.

quadrinotatus (*Peronomerus*), Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 333 : Chaud., Ann. Soc. Ent. Belg., xxi, p. 152 : Bates, Trans. Ent. S. Lond., 1873, p. 244.
Hab. ? India, Japan.

Genus **EUSCHIZOMERUS.**

Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 413 : Lacord., Gen. Col., i, p. 212 : Ann. Soc. Ent. Belg., xxi, 1869, p. 157 : Mun. Cat., p. 211.

aeneipennis, Chaudoir, Rev. Mag. Zool. (2s.), xxi, 1869, p. 118 ; *id.*, Ann. Soc. Ent. Belg., xxi, p. 159.
?=*denticollis*, Kollar, *q. v.*
Hab. Malacca.

aeneus, Chaudoir, Rev. Mag., *l. c.*, p. 118 : *id.*, Ann. Belg. *l. c. supra*, p. 160.
Hab. Dekhan.

denticollis, Kollar, Ann. Wien Mus., i, 1836, p. 334, t. 31, f. 2, *a. b.*
Hab. ? India.

metallicus, Harold, Stettin. Ent. Zeit. xl, 1879, p. 331.
Hab. India.

Genus **PERONOMERUS.**

Schaum, Ann. Soc. Ent. Fr., (3s.) i, 1853, p. 440 : Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 162 : Mun. Cat., p. 211.

fumatus, Schaum, Ann. Soc. Ent. Fr., (3s.) i, 1853, p. 440 : Chaudoir, Ann. Soc. Ent. Belg., xxi, p. 162 : Bates, Trans. Ent. S. Lond., 1873, p. 245 ; *ib.*, 1883, p. 234.
aeratus, Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 354.
nigrinus, Bates, Trans. Ent. S. Lond., 1873, p. 245 : Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 164.
Hab. India, Dacca, Hong-Kong, Japan [*Ind. Mus.*, Hong Kong].

Genus **TRICHISIA.**

Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 331 : Chaudoir, *l. c.*, xliv (2), 1872, p. 283 ; *id.*, Ann. Soc. Ent. Belg., xxi, 1878, p. 164 : Mun. Cat., p. 211.
Epicosmus, pt., Chaudoir, *olim : Eudema*, pt, Lap. de Casteln.
Isotarsus, pt, Laferté, Schaum.

cyanea (*Isotarsus*), Schaum, Ann. Soc. Ent. Fr., (3s.) i, 1853, p. 439 : Chaudoir, Ann. Soc. Ent. Belg., xxi, p. 165.
cyanescens, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 332.
Hab. India, Hong-Kong.

morio (*Isotarsus*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 221, note 4 : Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 165.
Hab. Bengal, Dekhan.

SIAGONINI, Lacordaire, Gen. Col. i, 1854, p. 162 : Chaudoir, Bull. Mosc. 1 (i), 1876, p. 62 : Horn, Gen. Carab, p. 127.

Genus **SIAGONA**.

Latreille, Gen. Crust. & Ins., i, 1806, p. 160 : Lacord., Gen. Col., i, p. 162 : Mun. Cat., p. 161 : Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 439 ; *Monograph ib.*, 1 (i), 1876, p. 76.

atrata Dejean, Spec., i, 1825, p. 360 : Chaudoir, *Mon.*, p. 85.
Hab. India, Dekhan, Burma.

Baconii, Chaudoir, *Mon.*, p. 89.
Hab. N. India, Burma.

cinctella, Chaudoir, *Mon.*, p. 95.
Hab. Burma, Rangoon.

depressa *(Galerita)*, Fabr., Ent. Syst. Suppt., 1798, p. 56 : *id.*, Syst. Eleuth., i, p. 215: Chaudoir, *Mon.* p. 90: Bedel, Ann. Soc. Ent. Fr., (6 s.) vii, 1887, p. 195.
europæa, Dejean, Spec., ii, 1826, p. 468 ; Ic. Col. Eur., i. t, 20, f. 2 : Chaudoir, *Mon.*, p. 91: ? Gray, Griffith An. Kingd. Ins., i, 1832, t. 8, f. 1.
Oberleitneri, Dejean, Spec., v, 1831, p. 477 : Ic., i. t. 20, f. 3 : Peyron, Ann. Soc. Ent. Fr., (3 s.), 1858, p. 389.
Hab. Mediterranean & Caspian regions, Senegal, Nubia, Persia, India [*Ind. Mus.*, China, Bengal, Sáhibganj].

fiesus *(Galerita)*, Fabr, Syst. Eleuth., i, 1801 p. 216: Dejean, Spec., i, 1825, p. 363 : Chaudoir, *Mon.*, p. 94.
dorsalis, Dejean, Spec. v, 1831, p. 477.
Hab. India, Senegal.

germana, Chaudoir, *Mon.*, p. 96.
Hab. Coromandel (? Pondicherry, Nilgiris).

induta, Chaudoir, *Mon.*, p. 98.
Hab. India, Dekhan.

obscuripes, Chaudoir, *Mon*., p. 86.
Hab. Burma, Rangoon.

plagiata, Chaudoir, *Mon.*, p. 93.
Hab. India, Dekhan.

plana, Bonelli, Mém. Acad. Turin, 1813, p. 458: Bedel, Ann. Soc. Ent. Fr., (6, s.) vii, 1887, p. 195.
depressa, Dejean, Spec., i, 1825, p. 361 *(nec* Fabr.) : Chaud., *Mon.*, p, 90.
Hab. India, Dekhan, Coromandel.

pubescens, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 439 ; *Mon.*, p. 95.
var. *dilutipes*, Chaudoir, Bull. Mosc., *l. c.*, p. 440.
Hab. N. India [*Ind. Mus.*, Sáhibganj, Rangoon].

punctatissima, Chaudoir, *Mon.*, p. 106.
Hab. N. India, Simla.

punctulata, Chaudoir, *Mon.*, p. 99.
Hab. India, Dekhan.

sublaevis, Chaudoir, *Mon.*, p. 86.
Hab. Malacca, Bangkok, Cambodia.

OZAENINI:—Lacordaire, Gen. Col., i, p. 155: *Révision*, Chaudoir, Ann, Soc. Ent. Belg., xi, 1867-68, p. 45: Horn, Gen. Carab., p. 128: Leconte & Horn, Class. Col., p. 23.

Genus **PSEUDOZAENA.**

Lap. de Casteln., Et. Ent., i, 1834, p. 55: Mun. Cat., p. 158.
Heplognathus, Chaudoir, Bull. Mosc., xxi, 1848, p. 101.
Ozaena, Klug, Dejean, ? pt. Lap. de Casteln, *nec* Olivier.
Picrus, Chaudoir, Bull. Mosc,, xxvii (i), 1854, p. 290; *Révision*, p. 45.

obscura *(Picrus)*, Chaudoir, Ann. Soc. Ent. Belg., xi, 1867-8, p. 46.
Hab. Borneo.

opaca *(Picrus)*, Chaudoir, *l. c.*, p. 46.
Hab. India.

orientalis *(Ozaena)*. Klug, Jahrb. Ins., 1834, p. 81, t. 1, f. 8: Chaudoir, Bull. Mosc., xxi (i), 1848, p. 101; *id.*, xxvii (2), 1854, p. 291; *id.*, Ann. Soc. Ent. Belg., xi, p. 45.
megacephala, *(Pseudozaena)*, Lap. de Casteln., Et. Ent., i, 1834, p. 54, t. 2, f. 4.
Hab. Java, Borneo, Malacca.

Genus **ITAMUS.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 65: Lacord., Gen. Col., i, p. 160: Mun. Cat., p. 159: Chaudoir, Ann. Soc. Ent. Belg., xi, 1867, p. 51.

castaneus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 67: Chaudoir, *l. c. supra* p. 51.
Hab. Burma.

Genus **EUSTRA.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 65: Lacord., Gen. Col., i, p. 161: Mun. Cat., p. 161: Chaudoir, Bull. Mosc., xxvii (i), 1854 p. 309: *id.*, Ann. Soc. Ent. Belg., xi, 1867, p. 71.

plagiata, Schmidt Goebel, Faun. Col. Birm., 1846, p. 66, t. 3, f 1: Chaudoir, Bull, Mosc., xxvii (2), 1854, p. 309; *id.*, Ann. Soc. Ent. Belg., xi, p. 71: Bates, Trans. Ent. S. Lond., 1873, p. 237.
Hab. Burma, Martaban, Japan.

NOMIINI:—Horn, Gen. Carab., 1881, p. 129: Leconte & Horn, Class. Col., p. 24.
Coscinini, Chaudoir, Bull. Mosc., 1 (i), 1876, p. 115.

Genus **COSCINIA.**

Dejean, Spec., v, 1831, p. 478: Lacord., Gen. Col., i, p. 167: Mun. Cat., p. 162: Chaudoir, Bull. Mosc., 1 (i), 1876, p. 115.
Cymbionotum, Baudi, Berlin. Ent. Zeits., 1864, p. 211.

Graniger, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 197.
Trychina, Klug, Symb. Phys., 1832.

fascigera, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 92; *ib.*, l (i), 1876, p. 121.
Hab. N. India.

Helferii, Chaudoir, Bull. Mosc., xxxii (2), 1850, p. 441 ; *ib.*, l (i), 1876, p. 122.
Hab. Burma, Martaban, Siam.

MORIONINI:—Lacordaire, Gen. Col., i, p. 180 : Chaudoir, Bull. Mosc., lv (i), 1880, p. 317 : Horn, Gen. Carab., p. 132 : Leconte & Horn, Class. Col., p. 26 : Bates, Biol. Centr. Amer., Col., i (i), p. 88.

Genus **MORIO**.

Latreille, Consid. Gén., 1810, tab. méth.: Lacord., Gen. Col., i, p. 183 : Mun. Cat., p. 172 : Putzeys, Stettin. Ent. Zeit., xl. 1879, p. 283 : Chaudoir, *Monograph*, Bull. Mosc., lv (i), 1880, p. 327.
Harpalus, pt, Latreille : *Scarites*, pt, Pal. Beauv.

angustus, Chaudoir, Bull. Mosc., lv (i), 1880, p. 346.
Hab. Philippines.

brevior, Putzeys, Ann. Mus. Civ. Gen., iv, 1873, p. 217 ; vii, p. 727 : Chaud., *l. c. supra*, p. 340.
Hab. Borneo, Sarawak.

cordicollis, Chaudoir, Bull. Mosc., lv (i), 1880, p. 343.
Hab. Borneo, Kandy, Balangoda *(Bates)*.

cucujoides, Walker, Ann. Mag. N. H., (3s) ii, 1858, p. 203 : ? Chaud., *l. c. supra*, p. 342 : Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 211.
Hab. Ceylon.

Doriae, Putzeys, Ann. Mus. Civ. Gen., iv, 1873, p. 217 ; vii, p. 727 : Chaud., Bull. Mosc., lv (i), p. 345.
Hab. Borneo, Sarawak.

intermedius, Chaudoir, Bull. Mosc., lv (i), 1880, p. 344.
Hab. Philippines, Batchian, Ternate, ? Java.

luzonicus, Chaudoir, *l. c.*, xxv (i), 1852, p. 81 ; *id*, lv (i), 1880, p. 344: Putzeys, Ann. Mus. Civ. Gen., vii, p 726.
Hab. Siam, Philippines, Amboina, Ternate.

orientalis, Dejean, Spec., i, 1825, p. 432 : Putzeys, Ann. Mus. Civ. Gen., iv, p. 216 : Bates, *l. c.*, (2s.) vii, 1889, p 106 : Chaud., Bull. Mosc., lv (i), 1880, p. 338.
Hab. Java, Burma, Bhamo, Meetan, [*Ind. Mus.*, Tavoy, Tenasserim].

subconvexus, Chaudoir, Bull. Mosc., lv (i), 1880, p. 340.
Hab. ? Java.

submarginatus Chaudoir, *l. c.*, p. 342.
Hab. ? Borneo, Sunda Islands.

trogositoides, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 203, *nec* Chaudoir, Bull. Mosc., xxv (i), 1852, p. 81 : Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 143, 211,
Hab. Ceylon, ? Andaman Islands.

Walkerii, Putzeys, Ann. Mus. Civ. Gen., iv, 1873, p. 216 : Chaud., Bull. Mosc., lv (i), 1880, p. 341.
Hab. Ceylon, Kandy *(Bates)*.

Genus **MORIOIDIUS**.

Chaudoir, Bull. Mosc., lv (i), 1880, p. 380.

Doriae, Chaudoir, *l. c.*, p. 383.
Hab. Borneo, Sarawak.

BEMBIDIONINI:—Lacordaire, Gen. Col., i, 1854, p. 379 : Horn, Gen. Carab., p. 133 : Leconte & Horn, Class. Col., p. 27.

Genus **TACHYPUS**.

Lacordaire, Gen. Col., i,1854, p. 381 : Mun. Cat., p. 400.

indicus, Chaudoir, Bull. Mosc., xxiii (3), 1850, p. 189.
Hab. N. India.

semilucidus, Motschulsky, Et. Ent. 1861, p. 24 ; Bull. Mosc., xxxvii (3), 1864, p. 180 : Bates, Trans. Ent. S. Lond., 1873, p. 300.
nubifer, Morawitz, Bull. Acad. St. Petersb., v, 1862, p. 327.
Hab. Hongkong, Japan, Amuria.

Genus **BEMBIDION**.

Latreille, Hist. Nat. Ins., viii, 1804, p. 221 : Lacord., Gen. Col., i, p. 382 : Jacq. Duval, *Monograph* (Eur. Spec.), Ann. Soc. Ent. Fr., (2 s.) ix, 1851, p. 441 ; x, 1852, p. 101 : Schaum, Berlin. Ent. Zeits., iv. 1860, p. 198 : Mun. Cat., p. 405.

Actedium, Motschulsky, Bull. Mosc , xxxvii (3), 1864, p. 182.
Amerizus, Chaudoir, Rev. Mag. Zool., 1868, p. 216.
Apteromimus, Wollaston, Col. St. Helena, 1877, p. 7.
Bembicidium, Mun. Cat. p. 405.
Campa, Motschulsky, Ins. Sib , 1842, p. 263 ; Bull. Mosc., *l. c. supra*, p. 185.
Chlorodium, Motschulsky, Bull. Mosc., *l. c. supra* p. 182.
Cillenus, Samouelle, Ent. Comp., 1819, p. 148 : Curtis, Brit. Ent., i, 1828, p. 200.
Emphanes, Motschulsky, Käfer Russl., 1850 : Bull. Mosc., *l. c. supra*, p. 185.
Endosomatium, Wollaston, Col. St. Helena, 1877, p. 8.
Eudromus, Kirby, Faun. Bor Amer. 1837, p. 55.
Eurytrachelus, Motschulsky, Käfer Russl., 1850 ; Bull. Mosc., *l. c. supra*, p. 183.
Hydrium, Leconte, Ann. Lyc. Nat. Hist. N. York, iv, 1848, p. 353 : Motsch., Bull. Mosc., *l. c. supra*, p. 186.
Leja, Dejean, Spec., v. 1831, p. 150.
Lopha, Dejean, *l. c.*, p. 183 : Motsch., Bull. Mosc., *l. c. supra*, p. 190.
Lymnaeum, Stephens, Ill. Brit. Ent., ii, 1829, p. 3 : Motsch, Bull. Mosc., *l. c. supra*, p. 133.
Metallina, Motschulsky, Käfer Russl., 1850 ; Bull. Mosc., *l. c. supra*, p. 187.
Neja, Motschulsky, Bull. Mosc., *l. c.*, p. 188.

Nepha, Motschulsky, *l. c.*, p. 190.
Notaphus (Megerle), Stephens, Ill. Brit. Ent. ii, 1829, p. 4; Motsch., Bull. Mosc., *l. c.*, p. 184.
Ochthedromus, Leconte, *l, c. supra* p. 153.
Oeys, Stephens, *l. c. supra*, p. 10; Motsch., Bull. Mosc., *l. c. supra*, p. 188.
Ocydromus, Clairville, Ent. Helv., ii, 1806, p. 20.
Odontium, Leconte, *l. c. supra*, p. 352.
Omala, Motschulsky, Ins. Sib., 1842, p. 250.
Peryphus, Dejean, Spec. v. 1831, p. 101 : Motsch., Bull. Mosc. *l. c. supra*, p. 189.
Phila, Motschulsky, Ins. Sib., 1842, p. 260; Bull. Mosc., xxxvii (3), 1864, p. 188.
Philochthus, Stephens, *l. c. supra*, p. 7 : Motsch., Bull. Mosc., *l. c.* p. 186.
Plataphus, Motschulsky, Bull. Mosc., *l. c. supra*, p. 184.
Princidium, Motschulsky, *l. c. supra*, p. 181.
Pseudophilochthus, Wollaston, Col. St. Helena, 1877, p. 7.
Sinechostictus Motschulsky, Bull. Mosc., *l. c. supra*, p. 186.
Talanes, Motschulsky, *l. c. supra*, p. 187.
Testedium, Motschulsky, *l. c. supra*, p. 182.
Trepanes, Motschulsky, *l. c. supra*, p. 186.

callipygum, Bohemann, Freg. Eug. Resa, Col., 1858, p. 17.
Hab. Hongkong.

hloreum, Bates, Trans. Ent. S. Lond., 1873, p. 332.
Hab. Yangtse Valley, Japan.

collutum Bates, *l. c.*, p. 332.
Hab. Yangtse Valley, Fuchau.

europs, Bates, Ann. Mag. N.H., (5s.) xvii, 1886, p. 156.
Hab. Ceylon, Kandy.

luridipenne, Schaum, Berlin. Ent. Zeits., iv, 1860, p. 199.
Hab. Bengal.

niloticum, Dejean, Spec., v, 1831, p. 73; Bates, Trans. Ent. S. Lond., 1873, p. 301; *ib.*, 1883, p. 269.
Batesii (*Notaphus*), Putzeys, C. R. Soc. Ent. Belg., xviii, 1875, p. lii.
opulentum, Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 420.
Hab. Egypt, Japan, China, Ceylon.

***pamirense**, Bates, Proc. Zool. S. Lond., 1878, p. 718.
Hab. Pamir, between Sirikol and Pangu [*Ind. Mus.*, type].

***punctipenne**, Bates, *l.c.*, p. 718.
Hab. ? Pámir or near Yarkand [*Ind. Mus.*, type].

tæniatum, Wiedemann, Zool. Mag., ii (i), 1823, p. 62.
Hab. Bengal.

xanthacrum, Chaudoir, Bull. Mosc., xxiii (3), 1850, p. 175, note.
Hab. N. India.

Genus **TACHYNOTUS.**

Motschulsky, Bull. Mosc., xxxiv, (i), 1861, p. 100 : Mun. Cat., p. 395.

castaneus, Motschulsky, *l.c. supra*, p. 100, t. 9. f. 1.
Hab. Ceylon.

Genus **TACHYS.**

(Ziegler) Motschulsky, Käfer Russl., 1850 : Mun. Cat., p. 401 : Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 737 ; Bates, Biol. Centr. Amer., Col., i (i), p. 138.

[Although Motschulsky's revision of the genus (summarised in Et. Ent., 1862, p. 27) has not been generally accepted, his observations deserve apparently more attention than has hitherto been given to them. I reproduce here the arrangement proposed by him in his own words :—

I.—Antennes allongées, composées d'articles plus longs que larges.

(*a*) corps plus ou moins convexe, ovalaire, luisant :—

1. élytres rétrécies vers la base, glabres au milieu, avec un petit sillon basal et un entier vers la suture et la marge laterale :—*Tachylopha.*
2. élytres profondement sillonées vers la suture:—*Tachyura—Klugii, orientalis*, Nietner.

(*b*) corps plus ou moins déprimé, oblong ou parallèle, avec un reflet metallique, changeant sur les élytres, qui sont striées, surtout vers la suture. *Tachys.*

(*c*) corps déprimé, allongé, parallèle ; élytres multistriées ; tête petite, courte ; troisième article de palpes max. élargi. *Lymnastis—pullulus, indicus*, Motsch.

II.—Antennes pas ou à peine plus longues que la moitié du corps, robustes, grossisant vers l'extrémité et composées d'articles plus ou moins larges.

(*a*). corps déprimé presque parallèle ; cotés du corselet rebordés sur toute leur largeur, sans angles relevés en arrière ; élytres multistriées ; elles vivent sous l'écorce des arbres. *Tachymenis—umbrosa*, Motsch.

(*b*). corps un peu convexe, ovalaire ; cotés du corselet rebordés seulement en arrière, avec les angles à peine saillants ; élytres glabres, sans striés, ou à peine marquées de chaque coté de la suture des sillons plus ou moins effacés ; palpes grands, de la longuer de la tête ; graduellement attenués en avant. *Polyderis—tenellus*, Motsch.

To these I have added

Elaphropus, Motsch., Bull. Mosc., xii, 1839, p. 4 ; *id., ib.*, xxii, 1859, p. 40, f. 4 : Mun. Cat., p. 400—*gracilis, latissimus*, Motsch.]

acaroides, Motsch., Et. Ent., 1859, p. 39 : Putzeys, Ann. Mus. Civ. Gen., vii, p. 240.
Hab. Ceylon, Colombo.

albicornis, Schaum, Berlin Ent. Zeits., iv. 1860, p, 199.
Hab. Hongkong.

amplians, Bates, Ann. Mag. N. H., (5 s.) xvii, 1886, p. 155.
Hab. Ceylon, Kandy.

anceps, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 742.
Hab. India.

arcuatus, Putzeys, *l. c.*, p. 744.
Hab. Ceylon.

atomarius, Wollaston, Col. Hesperid., 1868, p. 28 : Bates, Ann. Mag. N. H., (5 s.) xvii, p. 152.
microscopica, Bates, Trans. Ent. S. Lond., 1873, p. 299.
? *tenella (Polyderis)*, Motsch., Et. Ent., 1862, p. 35.
Hab. Cape Verd Islands, Ceylon (Bogawantalawa).

bioculatus, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 743 : Bates, *l. c.*, (2 s.) vii 1889, p. 105.
Hab. Ceylon ; Burma, Bhamo, Teintso, Tenasserim.

ceylanicus *(Bembidium)*, Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 423.
Hab. Ceylon.

cinctipennis, Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 99.
Hab. Ceylon, Colombo.

coracinus, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 739.
Hab. Borneo, Sarawak.

dorsalis, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 508.
Hab. India.

emarginatus *(Bembidium)*, Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 425 : Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 739 : Bates, Ann. Mag. N. H., (5 s.) xvii, 1886, p. 155.
scydmaenoides, Bates, Trans. Ent. S. Lond., 1873, p. 299 *(nec* Nietner).
Hab. Ceylon, Colombo *(Bates)*, Fuchau, Lower Yangtse Valley.

euides, Bates, Ann. Mag. N. H., (6 s.) xvii, 1886, p. 153.
Hab. Ceylon, Dikoya.

finitimus *(Bembidium)*, Walker, Ann. Mag. N. H., (3 s.) ii, 1858, p. 204.
Hab. Ceylon.

flaviculus, Motschulsky, Et. Ent., 1859, p. 39.
Hab. Ceylon.

fumigatus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 509.
Hab. India.

fusculus, Schaum, Berlin Ent. Zeits., iv, 1860, p. 200 : Putzeys, Ann. Mus. Civ. Gen., vii, p. 741.
Hab. Hongkong.

gracilis *(Elaphropus)*, Motsch., Et. Ent., 1862, p. 36.
Hab. India.

gradatus, Bates, Trans. Ent. S. Lond., 1873, p. 331.
Hab. Fuchau, China.

impresipennis, Motschulsky, Et. Ent., 1859, p. 39 : Putzeys, Ann. Mus. Civ. Gen., vii, p. 745.
Hab. Ceylon, Colombo.

impressus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 508.
Hab. India.

indicus (*Lymnaeum*), Motsch., Bull. Mosc., xxiv (4), 1851, p. 507 ; *id*, (*Lymnastis*), Et. Ent., 1862, p. 27.
Hab. India.

infans, Bates, Ann. Mag. N. H., (6s.) xvii, 1886, p. 154.
Hab. Ceylon, Kandy.

Klugii (*Bembidium*), Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 423.
Hab. Ceylon.

latissimus (*Elaphropus*), Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 508 : *id.*, Et. Ent., 1859, t. 1, f. 5.
Hab. India.

Nietnerii (*Tachyta*), Schaum, Berlin. Ent. Zeits., vii, 1863, p. 88.
Hab. Ceylon.

notaphoides, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 156.
Hab. Ceylon, Kitugalle.

orientalis (*Bembidium*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 425.
Hab. Ceylon.

ornatus (*Bembidium*), Nietner, *l. c.*, p. 426 : Putzeys, Ann. Mus. Civ. Gen., vii, p. 741.
Hab. Ceylon, Kandy (*Bates*).

ovatus (*Lopha*), Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 509.
albicornis, Schaum, Berlin. Ent. Zeits., iv, 1860. p. 199.
Hab. Hongkong.

paralellus Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 507.
Hab. India.

peryphinus, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 153.
Hab. Ceylon, Kitugalle.

poecilopterus, Bates, Trans. Ent. S. Lond., 1873, p. 331.
Hab. Fuchau, China.

politus, Motsch., Bull. Mosc., xxiv (4), 1851, p. 509 : Putzeys, Ann. Mus. Civ. Gen., vii p. 743.
ebeninus (*Bembidium*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 424.
Hab. Ceylon.

pullulus (*Lymnastis*), Motschulsky, Et. Ent.. 1862, p. 31.
Hab. India.

scydmaenoides (*Bembidium*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 427.
Hab. Ceylon, Colombo (*Bates*) ; Yangtse Valley (*Lewis*).

sericeus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 507.
Hab. India.

spilotus, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 152.
Hab. Ceylon, Colombo.

subvittatus, Bates, *l. c.*, p. 151.
Hab. Ceylon, Dikoya.

sulcatus *(Tachys)*, Motsch., Bull. Mosc., xxiv (4), 1851, p. 509 : Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 740.
Hab. India.

sulculatus, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 743.
Hab. Hongkong.

suturalis *(Tachys)*, Motsch., Bull. Mosc., xxiv (4), 1851, p. 508 : Putzeys, *l. c.*, *supra*. p. 746.
Hab. India.

tenellus, Motsch., Et. Ent., 1862, p. 35.
Hab. India.

triangularis *(Bembidium)*, Nietner, Journ. As. Soc. Beng., 1857, p. 72 : Ann. Mag. N. H., (3s.) ii, 1858, p. 422 : Schaum, Berlin. Ent. Zeits., 1863, p. 72 : Bates, Trans. Ent. S. Lond., 1873, p. 298.
atriceps, W. MacLeay, Trans. Ent. S. N. S. Wales, 1871, p. 116.
Hab. Egypt, Yemen (Arabia), Japan, Yangtse Valley, Ceylon, Colombo, Dikoya *(Bates)*, Celebes, Melbourne, Queensland.

tropicus *(Bembidium)*, Nietner, Ann. Mag. N. H., (2s.) ii, 1858, p. 421.
Hab. Ceylon, Dikoya (*Bates*).

truncatus (*Bembidium*), Nietner, *l. c.*, p. 421.
Hab. Ceylon.

umbrosus, Motsch., Bull. Mosc., xxiv (4), 1851, p. 507 ; *id., ib.*, xxv, 1862, p. 32. (*Tachymenis*), Et. Ent., ix, 1862, p. 32.
? extremus (*Acupalpus*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 204.
Hab. India, Ceylon, Dikoya (*Bates*), Kiukiang in Yangtse Valley.

vixstriatus, Bates, Trans. Ent. S. Lond., 1873, p. 331.
Hab. Yangtse Valley.

POGONINI:—Lacordaire, Gen. Col., i, 1854, p. 364 : Chaudoir, *Essai*, Ann. Soc. Ent. Belg., xiv, 1871, p. 21 : Horn Gen. Carab., p. 135.

Genus **POGONUS**.

Dejean, Spec., iii, 1828, p. 6 : Lacord., Gen. Col , i, p. 368 : Mun. Cat., p. 384 : Chaudoir, *Essai Mon.*, Ann. Soc. Ent. Belg., xiv, 1871, p. 23.

hindustanus, Motsch., Bull. Mosc. xxxvii (3), 1864, p. 192 : Chaudoir, Ess., p. 38 (*gen. dub*).
Hab. India, Tranquebar.

transfuga, Chaudoir, Ann. Soc. Ent. Belg., xiv. 1871, p. 30.
orientalis, Gebler, Bull. Mosc., xx (i), 1847, p. 319.
persicus, Chaudoir, *l. c.*, xv, 1842, p. 821.
Hab. Siberia, S. Russia, Persia, ? Kashmir.

Genus **PATROBUS**.

Dejean, Spec., iii, 1828, p. 26 : Lacord., Gen. Col., i, p. 367 : Mun. Cat., p. 386 : Chaudoir, Ann. Soc. Ent. Belg., xiv, 1871, p. 40 : Schaum, Naturg. Deutsch. Ins. i, p. 375.
Carabus, Paykull, Duftschmid, Panzer, Illiger. *Harpalus*, Gyllenhal, Zetterstedt. *Platysma*, Sturm.

flavipes, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 191 : Chaudoir, Ann. Soc. Ent. Belg., xiv, 1871, p. 40 : Bates, Trans. Ent. S. Lond., 1873, p. 294 : (*Deltomerus*) Chaudoir, Bull. Mosc., liii (3), 1878, p. 79.
Hab. Japan, Yangtse Valley, Hongkong.

yunnanus, Fairmaire, Ann. Soc. Ent. Fr., (6s.) vi, 1886. p.317.
Hab. Yunnan.

Genus **TRECHUS**.

Clairville, Ent. Helv., ii, 1806, p. 22 : Lacord., Gen. Col., i, p. 370 : Mun. Cat., p. 389 : *Mon.*, Putzeys, Stettin Ent. Zeit., 1847, p. 302 : Pandellé, Mat. Col. France, 1867, p. 131.
Blemus, pt. Stephens, Ill. Brit. Ent., 1828, p. 50 : Motsch., Bull. Mosc. xxxvii (3), 1864, p. 190.
Epaphius, Stephens, *l. c.*, *supra* p. 50.
Thalassophilus, Wollaston Ins. Mader., 1854, p. 20.

convexus, MacLeay, Annul. Javan, 1825, p. 20.
Hab. Java.

fasciatus, Motsch., Bull. Mosc., xxiv (4), 1851, p. 506.
Hab. India.

PTEROSTICHINI:—Horn, Gen. Carab., p. 136 : Leconte & Horn, Class, Col., p. 30.
Feronides, Lacordaire, Gen. Col., i, p. 317.
Stomides, Lacordaire, *l. c.*, p. 247.
Trigonotomides, Lacordaire, *l. c.*, p. 309.

Div. **TRIGONOTOMINA**:—Lacordaire, *l. c.* : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xi, 1868, p. 151.

Genus **TRIPLOGENIUS**.

Chaudoir, Bull. Mosc., xxv (i), 1852, p. 71 : *id.*, *Monograph*, Ann. Soc. Ent. Belg., xi, 1868, p. 152.
Omaseus, Morawitz, Motschulsky, MacLeay.
Trigonotoma, pt, Dejean, Laporte.

? **aeratus** (*Omaseus*), Hope, Gray's, Zool. Misc., 1831, p. 21.
Hab. Nepal.

andamanensis, Chaudoir, Bull. Mosc.. liii (3), 1878, p. 22.
Hab. Andaman Islands.

Buquetii, Lap. de Castelu., Et. Ent., 1834, p. 77 : Chaudoir, *Mon*., p. 162 ; Bull. Mosc., liii (3), 1878, p. 31.
Hab. Java.

chalcothorax, Chaudoir, Ann. Soc. Ent. Belg. xi, 1868, p. 153 ; Bates, Ann. Mus. Civ. Gen., (2s) vii, 1889, p. 105.
Hab. Cambodia, Cochin China ; Burmah, Bhamo.

himaleyicus (*Omaseus*), Redtenb., Hügel's Kaschm., iv (2), 1844, p. 501.
Hab. N. W. Himalaya ; Mussooree.

? **indicus** (*Omaseus*), Hope, Gray's Zool. Misc., 1831, p. 21.
Hab. Nepal.

ingens (*Omaseus*), Morawitz, Beitr. Z. Käf. Faun. Jesso, i, 1863, p. 54 : Chaudoir, Ann. Soc. Ent. Belg., xi, p. 154.
(*magnus* (*Omaseus*), Motschulsky, Et. Ent., 1860, p. 5.
Hab. China, Japan.

insignis, R. Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 310.
Hab. Borneo, Sarawak, Labuan.

Mouhotii, Chaudoir, *Mon.*, p. 152 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 105.
Hab. Cambodia ; Burma, Bhamo.

obscurus, Lap. de Casteln., Et. Ent., 1834, p. 76.
Hab Java.

planicollis, Dejean, Spec., iii, 1828, p. 185 : Chaud., *Mon*,, p. 154.
Hab Bengal.

praestans, Chaudoir, *Mon.*, p. 154.
Hab. Hongkong.

Putzeysii, Chaudoir, Bull. Mosc., liii (3), 1878, p. 31.
Hab. Java.

rectangulus, Chaudoir, *Mon.*, p. 153.
Hab. Dekhan.

semiviolaceus, Chaudoir, *Mon.*, p. 152.
Hab. N. India.

serraticollis, Chaudoir, *Mon.*, p. 153.
Hab. Dekhan.

viridicollis (*Omaseus*). MacLeay, Annul. Javan., 1825, p. 17 : Chaudoir, *Mon.*, p. 154 : Guérin, Ic. Règne Anim., t. 6, f. 2*a* : Gray, Griffith Anim. Kingd., Ins., i., 1832., t. 25, f. 2.
bicolor, Lap. de Casteln., Et. Ent., 1834, p. 75, t. 2, f. 2 : Chaud., *Mon.*, p. 152 ; *id.*, Bull. Mosc., liii (3), 1878, p. 33.
Hab. Java.

Waterhousei, Chaudoir, Rev. Mag. Zool., 1862, p. 489 ; *id.*, *Mon.*, p. 55.
Hab. N. India, Java.

Genus **LESTICUS.**

Dejean, Spec., iii, 1828, p. 190 : Lacord., Gen. Col., i, p. 312 : Mun. Cat., p. 294 ; Chaudoir, Ann. Soc. Ent. Belg., xi, 1868, p. 155.

amabilis, Chaudoir, *l. c. supra*, p. 155.
Hab. Java.

janthinus, Dejean, Spec., iii, 1828, p. 190 : Ic. Col. Eur., ii, t. 124, f. 3 : Lap. de Casteln., Hist. Nat. Ins., i, p. 120 : Chaudoir, *l. c.*, p. 155.
Hab. Java.

tricostatus, Chaudoir, *l. c. supra*, p. 157.
Hab. India.

Genus **TRIGONOGNATHA.**

Motschulsky, Et. Ent., vi, 1857, p. 25.

princeps, Bates, Trans. Ent. S. Lond., 1883, p. 243.
Hab. China, Kwantung.

Genus **TRIGONOTOMA.**

Dejean, Spec., iii, 1828, p. 182: Lacord., Gen. Col., i, p. 311: Mun. Cat., p. 293: Chaudoir, Bull. Mosc., xxv (i), 1852, p. 71; *id.*, *Monograph*, Ann. Soc. Ent. Belg., xi, 1868, p. 158.

chalceola, Bates, Trans. Ent. S. Lond., 1873, p. 328.
Hab. Hongkong.

Comottoii, R. Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 308.
Hab. Burma.

concinna, Lap. de Casteln., Et. Ent., 1834, p. 77: Chaudoir, *Mon.*, p. 159: Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 105.
Hab. Java.

crenata, Chaudoir, *Mon.*, p. 159.
Hab. India.

curtula, Chaudoir, *Mon.*, p. 160.
Hab. Laos.

Dohrnii, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 69; *Mon.*, p. 159.
Hab. Hongkong.

fulgidicollis, Lap. de Casteln., Et. Ent., 1834, p. 77: Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 309.
Hab. Java, ? Laos.

indica, Brullé, Hist. Nat. Ins., iv, 1840, p. 333: Chaud., *Mon.*, p. 158: Bates, Ann. Mag. N. H., (5 s.) xvii, 1886, p. 145.
viridicollis, Dejean, Spec., iii, 1828, p. 183 (*nec* MacLeay): Lap. de Casteln., Hist. Nat. Ins., i, p. 220.
Hab. Java, Ceylon, Colombo.

Lewisii, Bates, Trans. Ent. S. Lond., 1873, p. 284.
var. *bhamoensis*, Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 105.
Hab. Manchuria, Japan, China, Burma, Bhamo.

luzonica, Chaudoir, *Mon.*, p. 161.
Hab. Philippines, Luzon, Manilla.

nitidicollis, Chaudoir, *Mon.*, p. 160.
Hab. Cochinchina.

Petelii, Lap. de Casteln., Et. Ent., 1834, p. 78: Chaud., *Mon.*, p. 159.
Hab. Java.

similis, Chaudoir, *Mon.*, p. 158.
Hab. Dekhan.

Genus TRIGONOMINA.

Motschulsky, Bull. Mosc. xxxvii (4), 1864, p. 349 : Mun. Cat., p. 293.
? = Triplogenys, Chaudoir, *q. v.*

politocollis, Motschulsky, *l. c.*, p. 349.
Hab. India.

Div. **STOMINA**:—Lacordaire, Gen. Col., i, p. 247 : Chaudoir, Bull. Mosc., xix (4), 1846, p. 511.

Genus IDIOMORPHUS.

Chaudoir, Bull. Mosc., xix (4), 1846, p. 515 : Lacord., Gen. Col., i, p. 254 : Mun. Cat., p. 248 : Horn, Gen. Carab., p. 175.

Guerinii, Chaudoir, Bull. Mosc., xix (4), 1846, p. 518 : Lacord., Gen. Col., Atlas, t. 12, f. 1 *a*.
Hab. India, Nilgiris.

Genus DISPHAERICUS.

Waterhouse, Trans. Ent. S. Lond., iii, 1842, p. 211 : Lacord., Gen. Col., i, p. 249 : Mun. Cat., p. 247 : Horn, Gen. Carab., p. 126.
Dyschiridium, Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 130.
Spanus, Westwood, Proceed. Ent. S. Lond., iii, Feb. 1864, p. 3.

marginicollis, Schaum, Berlin. Ent. Zeits., 1864, p. 122, t. 2, f. 3.
Hab. India, Tranquebar.

ovicollis, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 73.
Hab. Ceylon, Dikoya.

Genus PACHYTRACHELUS.

Chaudoir, Bull. Mosc., xxv (i), 1852, p. 85 : Mun. Cat., p. 248.
Batoscelis, Lacord., Gen. Col., i, 1854, p. 261 : Mun. Cat., p. 249.
Systenognathus, Putzeys, Mém. Liège, xviii, 1862, p. 18 : Mun. Cat., p. 189.

ceylonicus *(Batoscelis)*, Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 103.
Hab. Ceylon.

cribriceps, Chaudoir, *l. c.*, xxv (i), 1852, p. 86.
Hab. N. India.

discipennis *(Agonoderus)*, Dejean, Spec., v, 1831, p. 815.
Hab. India, Simla.

oblongus *(Agonoderus)*, Dejean, *l. c.*, p. 813.
Hab. India.

politus, Schmidt Goebel, Faun. Col. Birm., 1846, t. 2, f. 8 *a.-d.*
Hab. Burma.

porosus, Putzeys, Mém. Liège, xviii, 1862, p. 19, t. 1, f. 2-4.
Hab. India.

Div. **PTEROSTICHINI**:—Horn, Gen. Carab., p. 137.

Genus **CATADROMUS.**

MacLeay, Annul. Javan., 1825, p. 18 : Lacord., Gen. Col., i, p 321 : Mun. Cat., p. 288.

tenebrioides (*Carabus*), Olivier, Enc. Méth., v, 1790, p. 324; *id.*, Ent., iii, 35, p. 17, t. 6, f. 67 : Dejean, Spec., iii, p. 187 : Gray, Griffith, Anim. Kingd., Ins. i, t. 12, f. 3 : Macleay, Annul. Javan, p. 19, t. 1, f. 5,

Rajah (*Harpalus*), Wiedemann, Anal. Ent., 1824, p. 7.

Hab. Java [*Ind. Mus.*, Australia ?].

Genus **PTEROSTICHUS.**

Bonelli, Obs. Ent. 1809, *tab. syn.* : Lacord., Gen. Col., i, p. 400 : Mun. Cat. p. 317.

Adelosia, Stephens, Cat. Brit. Ins. (2 ed.), 1832.

Aello, Gozis, M. T. Schw. Ent. Ges., vi, 1882, p. 297.

Agonodemus, Chaudoir, Bull. Mosc., xi, 1838, p. 9.

Arachnoidius, Chaudoir. *l. c.*, p. 9.

Argutor (Megerle), Stephens, Ill. Brit. Ent., i, 1828.

Argutoroidius, Chaudoir, Ann. Soc. Ent. Belg., xix. 1876, p. 114.

Bothriopterus, Chaudoir, Bull. Mosc., xi, 1838, p. 9.

Brachystylus, pt. Chaudoir., *l. c.*, p. 10.

Bryobius, Chaudoir, *l. c.*, p. 10.

Calopterus, Chaudoir, *l. c.*, p. 11.

Ceneus, Chaudoir, *l. c.*, xxviii (3), 1865, p. 109.

Cheporus, Latreille, Règne. Anim., (2 ed.) iv, 1825, p. 396.

Cophosus (Ziegler), Stephens, Ill. Brit. Ent., i, 1828 : Chaud., *l. c.*, *supra*, p. 1 .

Coscinopterus, Chaudoir, *l. c. supra*, p. 11.

Cryobius, Chaudoir, *l. c.*, p. 11.

Dysidius, Chaudoir, *l. c.*, p. 8.

Glyptopterus, Chaudoir, *l. c.*, p. 10.

Gonoderus, Motschulsky, Bull. Mosc., xxxii, 1859, p. 149.

Haplocoelus, Chaudoir, Bull. Mosc., xi, 1838, p. 8.

Haptoderus, Chaudoir, *l. c.*, p. 10.

Hypherpes (Esch.), Chaudoir, *l. c.*, p. 8.

Lianoe, Gozis, MT. Schw. Ent. Ges., vi. 1882, p. 298.

Lyperopherus, Motschulsky, Mém. Ac. St. Petersb., v, 1846, p. 136.

Lyperosomus, Motschulsky.

Lyperus, Chaudoir, Bull. Mosc., xi, 1838, p. 12.

Lyropedius, Seidlitz, Fauna Baltica, (2 ed.), 1887, p. 36.

Lyrothorax, Chaudoir, *l. c.*, *supra*, p. 9.

Melanius, Bonelli Mém. Acad. Turin, *tab. syn.*, 1809.

Myosodus, Fischer, Ent. Imp. Russ., ii, 1823, p. 122,

Omaseus (Ziegler), Stephens, Ill. Brit. Ent., i, 1828.

Oreophilus, Chaudoir, *l. c. supra*, p. 9.

Orthomus, Chaudoir, *l. c.*, p. 8.

Parapedius, Seidlitz, Fauna Baltica, (2 ed.), 1887, p. 36.

Pedius, Motschulsky, Bull. Mosc., xxxviii (4), 1865, p. 242.

Petrophilus, Chaudoir, *l. c. supra*, p. 9.

Phonias, Gozis, Récherche, 1886, p. 8.

Platypterus, Chaudoir. *l. c. supra*, p. 11.
Platysma, Bonelli, Obs. Ent., 1809, *tal. syn.* : Mun. Cat., p. 317.
Pledarus, Motschulsky, Bull. Mosc., xxxviii (4), 1865, p. 254.
Pseudocryobius, Motschulsky, Käfer Russl., 1850, 9.
Pseudoderus, Seidlitz, Fauna Baltica, (2 ed.), 1887, p. 36.
Pseudopedius, Seidlitz, *l. c.*, p. 36.
Pseudosteropus, Chaudoir, *l. c. supra*, p. 9.
Psychobius, Chaudoir, *l. c.*, p. 12.
Rhagadus, Motschulsky, Bull. Mosc., xxxviii (4), 1865, p. 261.
Steropus (Megerle), Stephens, Ill. Brit. Ent., i, 1828. Chaud., *l. c. supra*, p. 9.
[The above synonymy requires examination and revision.]

aeneocupreus (*Platysma*), Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 95.
Hab. Yunnan.

birmanus (*Loxandrus*), Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 106.
Hab. Burma, Bhamo.

curtatus (*Euryperus*), Fairmaire, Ann. Soc. Ent. Fr., (6 s.) vi, 1886, p. 312.
Hab. Yunnan.

diversus (*Omaseus*), Fairmaire, *l. c.*, p. 311.
Hab. Yunnan.

gagates (*Platisma*), Hope, Gray's Zool. Misc., 1831, p. 21.
Hab. Nepál.

latecosta (*Platysma*), Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 94.
Hab. Yunnan.

Yunnanus, (*Pterostichus*), Fairmaire, *l. c.*, p. 94.
Hab. Yunnan.

longinquus, Bates, Trans. Ent. S. Lond., 1873, p. 286.
Hab. Yangtse Valley, Japan.

Noguchii, Bates, *l.c.*, p. 286.
Hab. Yangtse Valley, Nagasaki.

simillimus, Fairmaire, Ann. Soc. Ent. Fr., (4s.) vi, 1886, p. 312.
Hab. Yunnan. ÷

piscescens (*Simodontus*), Chaudoir, Bull. Mosc., xlvi (3), 1873, p. 114.
Hab. ? Philippines? Australia.

Genus **RHATHYMUS**.

Dejean, Spec., v, 1831, p. 783 : Mun. Cat., p. 334 : Chaudoir, Bull. Mosc., liii (3), 1878, p. 7.
Rathymus, Dejean, *l.c. supra* : Lacord., Gen. Col., i, p. 329.
Selenidia, Motsch., Et. Ent., 1855, p. 45.
Strigia, Brullé, Hist. Nat. Ins., iv, 1840, p. 382 : Lacord., Gen. Col., i, p. 327 : Mun. Cat., p. 333.

ater, Chaudoir, Bull. Mosc., liii (2), 1878, p. 8.
Hab. India, Coromandel.

maxillaris (*Strigia*), Brullé, Hist. Nat. Ins., iv, 1840, p. 382, t. 15, f. 6 : Chaudoir, *l.c. supra*, p. 8.
Hab. India.

stigma, Fabr., Syst. Eleuth., i, 1801, p. 192 : (*Selenidia*) Motsch., Et. Ent., 1855, p. 45 : Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 140 ; *id.*, Bull. Mosc., liii (3), p. 9.
? *sulcatus*, Fabr. Ent. Syst. iv. App. 1794, p. 443.
Hab. India, Dekhan, Java.

Genus **LAGARUS.**

Chaudoir, Bull. Mosc., xi, 1838, p. 10.
? ? *Argutor*, Stephens, Ill. Brit. Ent., 1828 ; *teste*, Gozis, Récherche, p. 8.

? **impunctatus**, Bates, Ann. Mag. N.H., (5s.) xvii, 1886, p. 145.
Hab. Ceylon, Colombo.

Genus **ABACETUS.**

Dejean, Spec., iii, 1828, p. 195 : Lacord., Gen. Col., i, p. 315 : Mun. Cat., p. 295 : Chaudoir, Stettin. Ent. Zeit., 1859, p. 126 ; *id.*, *Monograph*, Bull. Mosc., xlii (i), 1869, p. 353.
Astygis, Rambur, Faun. Audal., 1842, p. 95.
Coelostomus, MacLeay, Annul. Javan., 1825, p. 23 : Lap. de Casteln., Hist, Nat. Ins., i, p. 123.
Dicaelindus, MacLeay, Annul. Javan., 1825, p. 18 : Schaum, Berlin. Ent. Zeits, vii, 1863, p. 86 : Chaud., Bull. Mosc., xlii (i), 1869, p. 356.
Distrigodes, pt., Motsch., Bull. Mosc., xxxvii (4), 1864, p. 353 : Mun. Cat., p. 296.
Distrigus, Dejean, Spec., iii, 1828, p. 191 : Lacord., Gen. Col., i, p. 316 : Mun. Cat., p. 296.

aenigma, Chaudoir, *Mon.*, Bull. Mosc., xlii (i), 1869, p. 358 : Fairm. Ann. Soc. Ent. Fr., 1888, p. 336.
Hab. Cochin China, Tonkin, Hongkong.

amplicollis, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 106.
Hab. Burma, Katha, Teintso, Bhamo.

anomalus, Chaudoir, *Mon.*, p. 367.
Hab. Ceylon, Colombo.

antiquus (*Argutor*), Dejean, Spec., iii, 1828, p. 246 : Chaudoir, *Mon.*, p. 391.
picipes, Motsch., Bull. Mosc., xxxviii (4), 1865, p. 228 (*nec* MacLeay).
relinquens (*Argutor*), Walker, Ann. Mag. N.H., (3s.) ii, 1858, p. 204.
submetallicus (*Distrigus*), Nietner, *l.c.*, p. 177.
Hab. India, Coromandel, Ceylon, Colombo,

atratus (*Distrigus*), Dejean, Spec., iii, 1828, p. 194 : Chaud., *Mon.*, p. 358.
costatus (*Distrigus*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 176.
Hab. Ceylon, Colombo.

bipunctatus (*Distrigodes*), Motsch., Bull. Mosc., xxxviii (4), 1864, p. 352 ; Chaudoir, *Mon.*, p. 386.
? *pallipes*, Chaudoir, *q. v.*

rufulus (*Distrigodes*), Motsch., *l.c.*, xxxviii (4), 1865, p. 327.
Hab. India, Burma.

bisignatus, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 105.
Hab. Burma, Bhamo, Shwegu.

carinifrons, Bates, Ann. Mag. N.H., (5s.) xvii, 1886, p. 144.
Hab. Ceylon, Colombo.

chalceolus, Chaudoir, *Mon*, p. 384.
Hab. N. India.

cordicollis, Chaudoir, *Mon.*, p. 357.
Hab. India. Tranquebar; Ceylon, Galle.

cyathoderus, Chaudoir, Mon., p. 373.
Hab. N. India.

degener (*Argutor*), Walker, Ann. Mag. N.H., (3s.) ii, 1858, p. 204.
Hab. Ceylon.

Dejeanii (*Distrigus*), Nietner, *l.c.*, p. 178: Chaud., *Mon.*, p. 390.
flavipes (*Coelostomus*), Motsch., Bull. Mosc., xxxviii (4), 1865, p. 228.
Hab. India, Ceylon.

dilutipes, Chaudoir, Mon., p. 383.
Hab. Siam.

dorsalis (*Astygis*), Motsch., Bull. Mosc., xxxviii (4), 1865, p. 229: Chaud., *Mon.*, p. 397.
?=*rufopiceus*, Nietner, *q. v.*
Hab. India, Tranquebar, Madura.

felspathicus (*Dicœlindus*), MacLeay, Annul. Javan., 1825, p. 19, t. 1, f. 6: Schaum, Berlin. Ent. Zeits., 1863, p. 86.
Hab. Java.

femoralis (*Distrigodes*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 354: Chaud., *Mon.*, p. 386.
Hab. India, Tranquebar.

guttula, Chaudoir, *Mon.*, p. 374.
Hab. Dekhan.

haplosternus, Chaudoir, Bull. Mosc., liii (3), 1878, p. 25.
Hab. Siam, Bangkok.

hirmococlus, Chaudoir, *Mon.*, p. 372.
Hab. Burma, Rangoon.

impressicollis (*Distrigus*), Dejean, Spec., iii, 1828, p. 193: Lap. de Casteln., Hist. Nat Ins., 1, p. 118: Chaud., *Mon.*, p. 359.
Hab. India, Dekhan.

leucotelus, Bates, Trans. Ent. S. Lond., 1873, p. 283.
Hab. Yangtse Valley, Nagasaki.

liioderes, Bates, Ann. Mag. N. H, (5s.) xvii, 1886, p. 144.
Hab. Ceylon, Colombo.

maculipes, Chaudoir, *Mon.*, p. 384.
Hab. Burma, Martaban.

marginicollis, Chaudoir, *Mon.*, p. 359.
Hab. Burma, Pegu, Rangoon.

Nietnerii, Chaudoir, *Mon.*, p. 392.
aeneus (Distrigus), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 177 : (*nec*, Dejean).
Hab. Ceylon, Colombo.

pallipes, Chaudoir, Mon., p. 386.
? = *bipunctatus*, Motschulsky, *q.v.*
Hab. Burma, Martaban.

picipes (*Coelostomus*), MacLeay, Annul, Javan, 1825, p. 24 : Hope, Col. Man., ii, t. 3 f. *a.d.* (*nec* Motsch.) : Lap. de Casteln., Hist. Nat. Ins., i, p. 123.
Hab. India.

picticornis, Chaudoir, Bull. Mosc., liii (3), 1878, p. 27.
Hab. Middle China.

politus, Chaudoir, *Mon.*, p. 368.
Hab. India, Dekhan.

politulus, Chaudoir, *Mon.*, p. 369.
Hab. Burma, Rangoon.

promptus (*Distrigus*), Dejean, Spec., iii, 1828, p. 195 : Chaud., *Mon.*, p. 370.
Hab. India, Coromandel.

quadricollis, Chaudoir, *Mon.*, p. 382.
Hab. Burma, Martaban.

quadriguttatus, Chaudoir, *Mon.*, 387 : Bates. Ann. Mag. N. H., (5s.) xvii, 1886, p. 143.
Hab. Ceylon, Kandy.

quadrimaculatus, Chaudoir, *Mon.*, p. 380.
Hab. N. India.

quadrinotatus, Chaudoir, *Mon.*, p. 388.
Hab. Bengal.

reflexus, Chaudoir, *Mon.*, p. 358.
Hab. N. India.

rufopiceus (*Distrigus*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 177 : Chaud., *Mon.*, p. 398.
Hab. Ceylon.

rufotestaceus, Chaudoir, *Mon.*, p. 398.
Hab. Dekhan.

siamensis, Chaudoir, Bull. Mosc., liii (3), 1878, p. 26.
Hab. Siam, Bangkok.

Genus **CHLAEMINUS**.

Motsch., Bull. Mosc., xxxvii (4), 1864, p. 351 : Mun. Cat. p. 229: Chaud., *Monograph*, Bull. Mosc., xlii (i), 1869, p. 401.
Distrigodes, pt, Motschulsky, *l.c. supra*, p. 353.

biguttatus, Motsch., Bull. Mosc. xxxvii (4), 1864, p. 351 : Chaud., *Mon.*, p. 401.
Hab. India, Dekhan, Tranquebar, Burma, Martaban.

biplagiatus, Chaudoir, *Mon.*, p. 402.
Hab. Burma, Rangoon.

cruciatus, Chaudoir, *Mon.*, p. 403.
Hab. Bengal.

flavoguttatus (*Distrigodes*), Motsch., Bull. Mosc., xxxvii (4), 1864, p. 354 : Chaud., *Mon.*, p. 404.
Hab. Burma.

quadriplagiatus, Chaudoir, *Mon.*, p. 403.
Hab. Dekhan.

Genus **HOLCONOTUS**.

Chaudoir, Rev. Mag. Zool., (3s.) iv, 1876, p. 352.

ferrugineus (*Abacetus*), Chaudoir, Bull. Mosc., xli (2), 1869, p. 399: Schmidt Goebel, Faun. Col. Birm., t. 2, f. 6.
Hab. Burma, Siam.

Genus **AULACOCOELIUS**.

Chaudoir, Bull. Mosc., xlii (2), 1869, p. 405.

liopleurus Chaudoir, *l.c.*, p. 406.
Hab. ? N. Australia, ? Philippines, Luzon.

Genus **POECILUS**.

Bonelli, Obs. Ent., 1809, tab. syn : Lacord., Gen. Col., i, p. 402 ; Mun. Cat., p. 300 : Chaudoir, L'Abeille, xiv, 1875, p. 1-54.
Ancholeus, subg., Chaudoir, L'Abeille, xiv, 1876, p. 45.
Blennidus, Motschulsky, Bull. Mosc., xxxviii (4), 1865, p. 251.
Brachystylus, pt, Chaudoir, Bull. Mosc., xi, 1838, p. 10.
Carenostylus, Chaudoir, *l.c.*, p. 8.
Chlaenioidius, Chaudoir, Bull. Mosc., xxxviii (3), 1865, p. 110.
Cyclomus, Chaudoir, Bull. Mosc., xi, 1838, p. 8.
Derus, Motschulsky, Käfer Russl., 1850, p. 50 ; *id.*, Bull. Mosc., xxxvii, (4), 1865, p. 255.
Sogines, (Leach) Stephens, Ill. Brit. Ent., 1828 : Chaud., Bull. Mosc., xi, p. 8.
Trirammatus, Chaudoir, Bull. Mosc., xi, 1838, p. 8 : Motsch., *l.c.*, xxxviii (4), 1865, p. 252.

cupreus, Linn., Faun. Suec., 1746, No. 801 : Dejean, Spec., iii, p. 207 : for *syn. vide* Mun. Cat., p. 301.
Hab. Europe, N. Africa, Asia Minor, Persia, Japan, Canton (*Putzeys*).

indicus (*Sogines*), Motschulsky, Bull. Mosc., xxxviii (4), 1865, p. 257.
Hab. N. India.

Genus **TROPIDOCERUS**.

Chaudoir, Bull. Mosc., liii (3). 1878, p. 9.

indicus, Chaudoir, *l.c.*, p. 13.
Hab. N. India.

Genus **MOLOPS**.

Bonelli, Obs. Ent. i, 1809, *tab. syn.*; Mun. Cat., p. 332 : Kraatz, Deutsche Ent. Zeits., 1875, p. 369.

piliferus, Bates, Proc. Zool. S. Lond., 1878, p. 718.
Hab. India, Murree [*Ind. Mus.*, type].

Genus **AEPSERA**.

Chaudoir, Bull. Mosc., xlviii (i), 1874, p. 28.

ferruginea, Chaudoir, *l.c.*, p. 30.
Hab. Burma.

Genus **AMARA**.

Bonelli, Obs. Ent., 1809, *tab. syn.* : Lacord., Gen. Col., i, p. 332 : Mun. Cat., p. 347 : Putzeys, *Monograph*, L'Abeille, 1871, p. 100.

Acrodon, Zimmermann, Gistl's Faunus, i, 1832, p. 40 : Mun. Cat., p. 344.
Amarocelia, Motschulsky, Et. Ent., 1862, p. 4.
Amathitis, Zimmermann, *l.c. supra*, p. 39 ; Mun. Cat., p. 342.
Bradytus, Stephens, Ill. Brit. Ent., i, 1828, p. 131 : Mun. Cat., p. 338.
Celia, Zimmermann, *l.c. supra*. p. 18 : Mun. Cat., p. 344.
Curtonotus (*Cyrtonotus*), Stephens, *l.c. supra*, p. 138 : Mun. Cat., p. 339 : Bates, Biol. Centr. Amer., Col., i (i), p. 76.
Isopleurus, pt, Kirby, Faun. Boreal. Amer., iv, 1837, p. 34.
Leiocnemis (*Liocnemis*), Zimmermann, *l.c. supra*, p. 38 : Mun. Cat., p. 342.
Leirus, Zimmermann, *l.c. supra*, p. 17 (= *Cyrtonotus*).
Percosia, Zimmermann, *l.c. supra*, p. 18 : Mun. Cat., p. 337.
Triaena, Leconte, Ann. Lyc. N. York, iv, 1848, p. 265.

ambigena, Bates, Proc. Zool. S. Lond, 1878, p. 716.
Hab. N. W. Himálaya, Pangong Valley [*Ind. Mus.*, type].

***badiola** (*Amathitis*), Bates, *l.c.*, p. 717.
Hab. north of Kuenluen [*Ind. Mus.*, type].

***bamidunya**, Bates, *l.c.*, p. 716.
Hab. Pámír [*Ind. Mus.*, type].

compactus (*Bradytus*), Bates, Proc. Zool. S. Lond., 1878, p. 49.
Hab. India, Murree [*Ind Mus.*, type].

darjelingensis, Putzeys, Stettin Ent. Zeit, xxxviii, 1877, p. 102.
Hab. Darjiling.

*** frivola** (*Liocnemis*), Bates, Proc. Zool. S. Lond., 1878, p. 717.
Hab. ? Yarkand, or E. slopes Pámir [*Ind Mus.*, type].

himalaica (*Liocnemis*), Bates, *l. c. supra*, p. 716.
Hab. India, Ladák [*Ind. Mus.*, type].

indica (*Liocnemis*), Putzeys, Mém. Liège, 1866, p. 216.
Hab. N. India.

* **kuenlunensis** (*Amathitis*), Bates, *l. c. supra*, p. 717.
Hab. Sanju [*Ind. Mus.*, type].

nitens (*Cyrtonotus*), Putzeys, Et. s. l. Amara, 1866, p. 234.
Hab. Manchuria, Japan, N. China, Szechuen.

* **pamirensis** (*Cyrtonotus*), Bates, Proc. Zool. S. Lond., 1878, p. 717.
Hab. Pámir [*Ind. Mus.*, type].

* **tartariae** (*Liocnemis*), Bates, *l. c. supra*, p. 716.
Hab. Between Yangihissar and Sirikol [*Ind. Mus.*, type].

? **yunnana**, Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 95.
Hab. China.

Genus **DRIMOSTOMA**.

Dejean, Spec., v. 1831, p. 745 : Lacord., Gen. Col., i, p. 313 : Mun. Cat., p. 294 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xv, 1872, p. 9.

rectangulum, Chaudoir, Ann. Soc. Ent. Belg., xv, 1872, p. 11 : Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 106.
Hab. Java, Burma, Shwegu, Teintso, Bhamo.

Genus **STOMONAXUS**.

Motschulsky, Etudes Entomologiques, 1859, p. 34.
Diceromerus, Chaudoir, Ann. Soc. Ent. Belg., xv, 1872, p. 15.

Chaudoirii (*Diceromerus*), Fleutiaux, Ann. Soc. Ent. Fr., (6 s.) vii, 1887, p. 60.
Hab. Annam, Hué.

orientalis (*Stomonaxus*), Motsch., Et. Ent., 1859, p. 35 : Chaudoir (*Diceromerus*), Ann. Soc. Ent. Belg., xv, 1872, p. 15.
Hab. India, Tranquebar, Ceylon, Dikoya (*Bates*).

striaticollis, Dejean, Spec., v, 1831 p. 747 : Chaud., Ann. Soc. Ent. Belg., xv, 1872, p. 13.
ceylanicum (*Drimostoma*), Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 178.
? *marginale* (*Drimostoma*), Walker, Ann. Mag. N. H., (3 s.) iii, 1859, p. 51 : Bates, *ib.*, (5 s.) xvii, 1886, p. 212.
rufipes (*Drimostoma*), Bohem., Freg. Eug. Resa, Col., 1858, p. 3.
? *sculptipennis* (*Stomonaxus*), Motsch., Et. Ent., 1859, p. 35, t. 1, f. 6.
Hab. India, Ceylon, Hong-Kong, Japan, Senegal.

LICININI :—Lacord., Gen. Col., i, p. 231 : Horn, Gen. Carab., p. 139 : Leconte & Horn., Class. Col., 1883, p. 32.

Genus **RHEMBUS**.

Latreille, Ic. Col. Eur., i, 1822, p. 85 : Mun. Cat., p. 238 : Laferté, Ann. Soc. Ent. Fr., (2 s) ix, 1851, p. 278.
? *Diploeheila*, Brullé, Hist. Nat. Ins., Col., i, 1834, p. 407 : Horn , Bull. Brookl. Ent. Soc. iii, 1880, p. 52.
Rembus, Latr., *l. c. supra* : Lacord, Gen. Col., i, p. 233 : Laferté.
Symphyus, Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 189,

elongatus, Bates, Trans. Ent. S. Lond., 1873, p. 256.
Hab. Yangtse Valley, Japan.

impressus (*Carabus*), Fabr., Ent. Syst. Suppl., 1798, p. 57 ; Syst. Eleuth., i, p. 188 : Dejean, Spec., ii, p. 383.
Hab. India.

latifrons, Dejean, Spec. v, 1831, p. 679.
Hab. India.

opacus, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 67.
Hab. Japan China, ? India, Java.

politus (*Carabus*), Fabr., Ent. Syst, i, 1792, p. 146 ; Syst. Eleuth., i, p. 189 : Dejean, Spec., ii, p. 381 : Lap. de Casteln., Hist. Nat. Ins., Col. i, p. 133.
Hab. India, [*Ind. Mus.*, Bengal, Sahibganj].

unicolor, Nietner, Ann. Mag. N. H., (3 s.), ii p. 1858, p. 180.
Hab. Ceylon.

zeelandicus, Redtenb, Reise Novara, Col., 1867, p. 10, t. 1, f. 5 : Bates, Trans. Ent. S. Lond., 1873, p. 256.
Hab. Formosa, Yangtse Valley, Japan, ? New Zealand.

Genus **BADISTER**.

Clairville, Ent. Helv., ii, 1806, p. 90 : Brullé, Hist. Nat. Ins., Col., i, 1834, p. 403 : Lacord., Gen. Col., i, p. 234: Mun. Cat., p. 239 : Laferté, Ann. Soc. Ent. Fr., (2 s.) ix, 1851, p. 285 : Leconte, Trans. Amer. Ent. S., viii, p. 165 ; *id.*, Bull. Brookl. Ent. S., v, 1882, p. 7.
Amblychus, Gyllenhal, Ins. Suec., ii, 1810, p. 74.
Baudia, Ragusa, Nat. Sicil., vii, 1884, p. 3.
Trimorphus, Stephens, Cat. Brit. Ins., 1829, p. 405.

rubidicollis, Wiedemann, Zool. Mag., ii (i), 1823, p. 58.
Hab. Bengal.

thoracicus, Wiedemann, *l. c.*, p. 57.
Hab. India.

Genus **ECCOPTOGENIUS**.

Chaudoir, Bull. Mosc., xxv (i), 1852, p. 72 : Lacord., Gen. Col., i, p. 320 : Mun. Cat., p. 297.

moestus, Chaudoir, *l. c. supra*, p. 74 : Bates, Ann. Mag. N. H., (5. s.) xvii, p. 212.
? *retinens*, Walker, Ann. Mag. N. H., (3 s.) iii, 1859, p. 51.
Hab. N. India, Ceylon.

Genus **DIROTUS**.

MacLeay, Annul. Javan., 1825, p. 16 : Lacord., Gen. Col., i, p. 312 : Mun. Cat., p. 294 : Lap. de Casteln., Hist Nat. Ins., i, p. 133.

subiridescens, MacLeay, Annul. Javan., 1825, p. 16 : Hope, Col. Man., ii, t. 2, f. 1, *a—e*.
Hab. Java.

PLATYNINI:—Horn, Gen. Carab., p. 141: Leconte & Horn, Class. Col., p. 33: *(Anchomenini)* Bates, Biol. Centr. Amer., Col., ii., p. 91.

Horn forms three sub-divisions:—*Platyni (Calathus, Pristonychus)*, *Masorei*, and *Perigoni*.

Genus **SPHODRUS**.

Clairville, Ent. Helv., ii, 1806, p. 88: Brullé, Hist. Nat. Ins. Col., i, 1834, p. 310: Lacord., Gen. Col., i, p. 340: Mun. Cat., p. 356: Motsch., Bull. Mosc., xxxvii (3), 1864, p. 314 *tab. syn.*

? brunneus, Hope, Gray's Zool, Misc., 1831, p. 21.
Hab. Nepál.

cordicollis, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 315.
Hab. Circassia, Georgia, India [Ind. Mus., ? var, Murree].

indus, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 67.
Hab. N. W. Himálaya [? *Ind. Mus.* Murree].

Genus **EULEPTUS**.

Klug, Bericht über Madagasc. Ins., 1833, p. 9: Lacordaire, Gen. Col., i, 1854, p. 353.

ooderus, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 365.
Hab. Himálaya.

Genus **FEANUS**.

Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 107.

spinipennis, Bates, *l. c.*, p. 108.
Hab. Burma, Bhamo, Teintso.

Genus **ONYCHOLABIS**.

Bates, Trans. Ent. S. Lond., 1873, p. 329.

sinensis, Bates, *l. c.*, p. 329.
Hab. Yangtse Valley.

Genus **CALATHUS**.

Bonelli, Obs. Ent., tab. syn., 1809: Dejean, Spec., iii, p. 62: Brullé, Hist. Nat. Ins. Col., i, 1834, p. 303: Lacord., Gen. Col., i, p. 342: Gautier, MT. Schw. Ent. Ges., ii, 1867, p. 236: Putzeys, *Monograph*, Ann. Soc. Ent. Belg., xvi, 1873, p. 19: Mun. Cat., p. 360: Leconte, Proc. Acad. Phil., vii, 1854, p. 36; *ib.*, 1860, p. 317.

Odontonyx, Stephens, Cat. Brit. Ins., 1829, p. 28; *id.*, Man. Brit. Col., p. 28.
Pristodactyla, Dejean, Spec., iii, 1828, p. 82: Lacord., Gen. Col., i, p. 343.
Pristosia, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 311: Mun. Cat. p, 360.

aeneocupreus, Fairmaire, Ann, Sc. Ent. Fr., (6 s.) vi, 1886, p. 314.
Hab. Yunnan.

cathaicus *(Pristodactyla)*, Bates, Trans. Ent. S. Lond., 1873, p. 330.
Hab. Fuchau.

cyclodera (*Pristodactyla*), Bates, l. c., p. 273.
Hab. Fuchau, Japan.

crenatus, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 82.
Hab. N. India.

Delevayii, Fairmaire, *l. c.*, xxxi, 1887, p, 96.
Hab. Yunnan.

falsicolor, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) vi, 1886, p. 315.
Hab. Yunnan.

Kollarii, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 72.
angustatus, Redtenb., Hügel's Kaschmir, iv (2), 1844, p. 500 (*nom. praeoc.*).
Hab. India.

lateritius. Fairmaire, Ann. Soc. Ent Fr., (6 s.) vi, 1886, p. 314.
Hab. Yunnan.

pectiniger, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 86.
Hab. N. India.

piceus (*Pristosia*), Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 312 : Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 91.
Hab. India.

Genus **PRISTONYCHUS**.

Dejean, Spec., iii, 1828, p. 43 : Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 379 ; Lacord., Gen. Col., i, p. 341 : Mun. Cat., p. 358 : Schaufuss, *Monograph*, SB. Nat. Ges. 'Isis,' xlii, 1865, p. 139 : Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 379.

Cryptotrichus, Schaufuss, Monograph, 1865, p. 110 : Mun. Cat. p. 355.
Cryptoxenus, Motsch., Bull., Mosc., xxxvii, (3), 1864, p 314.
Ctenipes, Latreille Régne Anim, (2 *ed.*) iv, 1829 p. 400.
Læmostenus, Bedel, Ann. Soc. Ent. Fr., (5s) vii, 1877, p. 250.
Læmosthenes, Bonelli. Mèm. Ac. Turin, 1809, *tab-syn.* ; Mun. Cat., p. 355.
Platynomerus, Faldermann, Faun. Ent. Transc., i, 1835, p. 45 : Mun. Cat., p. 354.

piscescens, Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 95.
Hab. Yunnan.

spinifer. Schaufuss, S. B. Nat. Ges. 'Isis,' 1862, p. 66 ; *ib.*, Mon., 1865, p. 176.
Hab. Himálaya.

Genus **PLATYNUS**.

Bonelli, Obs Ent., i, 1809, *tab. syn.* : Motsch., Bull. Mosc., xxxvii (3), 1864, p. 316 : Mun. Cat., p. 366 : Leconte, Proc. Acad. Phil., vii, 1854, p. 39 : Bates, Trans. Ent. S. Lond., 1873, p. 278 ; *id.*, Biol. Centr. Amer. Col., i (i), p. 91 : Leconte, Bull. Brookl. Ent. S., ii, 1879, p. 43.

Agonocyrthes, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 317.
Agonothorax, Motsch., *l. c.*, p. 317.
Agonum, Bonelli, Mém, Ac. Turin., 1813 *tab. syn.*
Anchodemus, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 317.
Anchomenus, pt., Bonelli, Mém. Ac. Turin., 1813, *tab. syn.* : Lacord. Gen. Col., i, p. 349.

Anchus, Leconte, Proc. Ac. N. Sci. Phil., vii, 1854, p. 38.
Batenus, Motsch., Bull. Mosc. *l. c. supra*, p. 317 *ined.* ?
Clibanarius, Gozis, M. T. Schw. Ent. Ges., vi, 1882, p. 295.
Dolichodes, Motsch., *l. c. supra*, p. 317.
Europhilus (Chaudoir) : Motsch. *l. c.* p. 317 : *ined.* ?
Limodromus (Eschsch.), Motsch., *l. c.* p. 317, 318.
Oxypselaphus, Chaudoir, Bull. Mosc., xvi, 1843 p. 415.
Promecoptera, Dejean, Spec., v., 1831, p. 443 ; Lacord., Gen. Col., i, p. 131 : Mun. Cat., p. 143.
Rhadine, Leconte, Ann. Lyc. Nat. Hist. New York, 1848, p. 218.
Rhytiderus, Chaudoir, Bull. Mosc., xvii (3), 1844, p. 470.
Tanystola, Motsch., Bull. Mosc , xxxvii (3), 1864, p. 317.
[*Anchomenus* (*Bonelli*), Bates (Biol. Centr. Amer., Col., i (i), p. 93, should apparently be separated].

aeneotinctus (*Anchomenus*), Bates, Trans. Ent. S. Lond., 1873, p. 330.
Hab. Fuchau.

amaroides (*Calathus*), Putzeys, Stettin. Ent. Zeit., xxxviii, 1877, p. 103.
Hab. Darjiling.

ceylonicus (*Agonothorax*), Motschulsky, Et., Ent., viii, 1859, p. 36.
Hab. Ceylon, Dikoya (*Bates*).

chinensis, Bohemann, Freg. Eug. Resa, Col., 1858, p. 15.
Hab. China.

Daimio (*Anchomenus*), Bates, Trans. Ent. S. Lond., 1873, p. 279.
Hab. China, Fuchau, Japan.

illocatus Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 203 : Bates (*Anchomenus*), *ib.*, (5s. xvii, 1886, p. 146.
degener (*Argutor*), Walker, *l. c. supra*, p. 204.
Hab. Ceylon, Nuwara Eliya.

iridens (*Anchomenus*), Bates, Trans. Ent. S. Lond., 1873, p. 329.
Hab. Hongkong.

* **ladakensis**, Bates, Proc. Zool. S. Lond., 1878, p. 718.
Hab. Pâmir, Pankong Valley, Tangtze, [*Ind. Mus.*, type].

laetus, Erichson, Nov. Acta Leop. Car., 1834, Suppl., p. 222, t. 37, f. 2.
Hab, Philippines.

limbaticollis, Gemm. & Har., Mun. Cat., p. 373.
limbatus, Bohem., Freg. Eug. Resa, Col., 1858, p. 15 (*nec* Say).
Hab. China.

liseopterus, Chaudoir, Bull. Mosc., xxvii (i), 1854, p. 136.
Hab. N. India.

magnus (*Anchomenus*), Bates, Trans. Ent. S. Lond., 1873, p. 278.
Hab. Yangtse Valley, Shanghai, Japan.

marginalis (*Lebia*), Wiedemann, Zool. Mag., ii (i), 1823, p. 60. (? *Anchomenus*) : (*Promecoptera*) Lap. de Casteln., Hist. Nat. Ins., i. p. 54 :
Hab. Bengal.

nuceus (*Anchomenus*), Fairmaire, Ann. Soc. Ent. Belg. xxxi, 1887, p. 96.
Hab. Yunnan.

orbicollis (*Agonocyrthes*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 323.
Hab. Hongkong.

placidulus (*Agonum*), Walker, Ann. Mag. N. H., (3s) ii, 1858, p. 203.
Hab. Ceylon.

politissimus, Bates, Proc. Zool., S. Lond., 1878, p. 719.
Hab. India, Murree (Panjab) [*Ind. Mus.*, type].

protensus (*Dyscolus*), Morawitz, Beitr. Käferf. Jesso, 1863, p. 42 : Bates, Trans. Ent. S. Lond., 1873, p. 278.
Hab. China, Japan.

scintillans, Bohem., Freg. Eug. Resa, Col., 1858, p. 16.
Hab. Hongkong.

semicupreus (*Agonum*), Fairmaire, Ann. Soc. Ent. Belg. 1887, p. 97.
Hab. Yunnan.

Genus **DICRANONCUS.**

Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 392 ; Lacord., Gen. Col., i, p. 358 : Mun. Cat., p. 384 : Chaudoir, Ann. Soc. Ent. Fr., (5s.) viii, 1878, p. 277.
Loxocrepis, Brullé, Hist. Nat. Ins. Col., i, 1834, p. 325 (*nec* Eschsch) : Motsch., Bull. Mosc., xxxvii (4), 1864, p. 309.

amabilis, Chaudoir, Ann. Soc. Ent. Fr., (3s.) ix, 1859, p. 350 note ; *id.*, (5s.) viii, 1878, p. 277.
ruficeps (*Loxocrepis*), Brullé (*nec* MacLeay), Hist. Nat. Ins., Col., i, 1834, p. 325, t. 12, f. 2.
Hab. N. India, Java.

cinctipennis, Chaudoir, Ann. Soc. Ent. Fr., (5s.) viii, 1878, p. 278.
Hab. Ceylon, Hongkong.

femoralis, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 393 ; *id.*, Ann. Fr., *l.c. supra*, p. 277 : Bates, Trans. Ent. S. Lond., 1873, p. 278.
coelestinus (*Loxocrepis*), Motsch., Bull. Mosc. xxxvii (3), 1864, p. 310.
Hab. Bengal, Simla, Burma, Japan (*Lewis*).

Genus **MENERA.**

Motschulsky, Et. Ent., 1859, p. 32.

quadridens, Motschulsky, *l.c.*, p. 32.
Hab. Java.

Genus **COLPODES.**

MacLeay, Annul. Javan., 1825, p. 17 : Lacord. Gen. Col., i, p. 361 : Mun. Cat., p. 381 : Chaudoir, Ann. Soc. Ent. Fr., (3s.) ix, 1859, p. 287 ; *id.*, *Monograph*, *l.c.*, (5s.) viii, 1878, p. 278 : Bates, Biol. Centr. Amer., Col., i (i), p. 100.
Abropus, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 306 (*nec* Guérin).
Dyscolus, Dejean, Spec., v, 1831, p. 437 : Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 381 : Lacord., Gen. Col., i, p. 356.

Loxocrepis, Esehsch., Zool. Atlas, ii, 1829, p. 6 : Lacord., Gen. Col., i, p. 362.
Metallosomus, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 304.
Omiastus, Motschulsky, *l.c*, p. 306.
Ophryodactylus, Chaudoir, *l.c.*, xxiii (2), 1850, p. 382.
Paranomus, Chaudoir, *l.c.*, p. 383.
Pleurosoma, Guérin, Mag. Zool., vi, 1844, t. 136.
Scaphiodactylus, Chaudoir, Bull. Mosc., xi, 1838, p. 20.
Stenocnemus, Mannerheim, Bull. Mosc., x, 1837, p. 29.

abropoides, Chaudoir, *Mon.*, *l.c. supra* p. 361.
Hab. Philippines.

aeneipennis (*Dyscolus*), Dejean, Spec., v, 1831, p. 441 ; Chaudoir, *Mon.*, p. 333.
Hab. Java.

aenescens, Chaudoir, *Mon.*, p. 368.
Hab. N. India.

amoenus, Chaudoir, Ann. Soc. Ent. Fr., (3s.) ix, 1859, p. 327 ; *Mon.*, p. 367.
splendens, Morawitz, Bull. Acad. Petrop., v, 1863, p. 324.
Hab. N.-W. India, Ceylon, Dikoya (Bates), Java, Philippines, Japan.

apicalis Chaudoir, *Mon.*, p. 367.
Hab. Philippines.

Baconii, Chaudoir, *Mon.*, p. 311.
Hab. Bengal.

bengalensis, Chaudoir, *Mon.* p. 312.
Hab. Bengal.

bipars (*Lebia*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 203 : Bates, id., (5s.) xvii, 1886, p. 148.
Hab. Ceylon.

?bispinus (*Euplynes*), Motschulsky, Et. Ent., 1859, p. 33.
Hab. Java.

brunneus, MacLeay, Annul. Javan., 1825, p. 17, t. 1, f. 3 : Gray, Griffith Anim. Kingd. Ins., i, t. 15, f. 3 : Lap. de Casteln., Hist. Nat. Ins., i, p. 57.
Hab. Java.

Buchanani, Hope, Gray's Zool. Misc., 1831, p. 21 : Lap. de Casteln. *l.c.*, *supra*, p. 57.
Hab. Nepal.

coelopterus, Chaudoir, *Mon.*, p. 368.
Hab. Shanghai.

cruralis, Chaudoir, *Mon.*, p. 376.
Hab. India, Malabar.

Dohrnii, Nietner, Ann. Mag. N. H. (3s.), ii, 1858, p. 429 ; Chaudoir, *Mon.*, p. 375.
Hab. Ceylon, Colombo, Pusilawa.

Hardwickii, Hope, Gray's Zool. Misc., 1831, p. 21 : Lap. de Casteln., Hist. Nat. Ins. i, 1850, p. 57.
Hab. Nepal.

hirmocoelus, Chaudoir, *Mon.*, 365.
Hab. N. India.

incertus, Chaudoir, *Mon.*, p. 369.
? = *Buchanani*, Hope, *supra cit.*
Hab. India.

iteratus, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 149.
Hab. Ceylon, Dikoya, Nuwara Eliya.

japonicus, (*Tanystola*), Motsch., Et. Ent., 1860, p. 9: ? Morawitz, Bull. Acad. St. Petersb., v, 1863, p. 324: Bates, Trans. Ent. S. Lond., 1873, p. 277.
Hab. Japan, China.

lampriodes, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 147.
Hab. Ceylon, Hadley, Dikoya.

luzonicus, Chaudoir, *Mon.*, 366.
Hab. Philippines.

nigriceps (*Loxocrepis*), Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 310.
Hab. India.

nilgherriensis, Chaudoir, *Mon.*, p. 301.
Hab. India, Nilgiris, Malabar.

obscuritarsis, Chaudoir, *Mon.*, p. 375.
Hab. Burma, Rangoon.

olivius, Bates, Trans. Ent. S. Lond., 1873, p. 331.
Hab. Hongkong.

ovaliceps, Bates, Proc. Zool. S. Lond., 1878, p. 719.
Hab. India, Murree [*Ind. Mus.*, type].

parallelus, Chaudoir, Ann. Soc. Ent. Fr., (5s.) ix, 1859, p. 326 ; *Mon.*, p. 368.
Hab. Sumatra.

plagioderus, Chaudoir, *Mon.*, p. 374.
Hab. India.

repletus, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 148.
Hab. Ceylon, Bogawantalawa.

retusus, Bates, *l.c. supra*, p. 148.
Hab. Ceylon, Kandy.

rotundatus, Chaudoir, *Mon.*, p. 302.
Hab. Nilgiris, Malabar.

ruficeps (*Lamprias*), MacLeay, Annul. Javan., 1825, p. 25 : (*Loxocrepis*), Eschsch., Zool. Atlas, ii, p. 6, t. 8, f. 3 : Gray, Griffith's Anim. Kingd., Ins., i, 1832, t. 19, f. 1 : Chaudoir, Ann. Soc. Ent. Fr., (3 s.) ix, 1859, p, 348 ; *id.*, *Mon.* p. 376 : Bates, Trans. Ent. S. Lond., 1883, p. 263 ; *id.*, Ann. Mag. N. H., (5 s.) xxii, p. 147.
Hab. India, Java, Sumatra, Philippines [*Ind. Mus.*, Calcutta, Sikkim].

rufitarsis (*Dyscolus*), Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 385 ; Ann. Soc. Ent. Fr., (3 s.) ix, 1859, p. 351 ; *Mon.*, p. 375.
Hab. Singapur, Sumatra.

saphyrinus, Chaudoir, *Mon.*, p. 366.
Hab. Penang, Tonda.

saphyripennis, Chaudoir, *Mon.*, p. 334.
Hab. India.

semiaeneus, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) vi, 1886, p. 315.
Hab. Yunnan.

semistriatus, Chaudoir *Mon.*, p. 365.
Hab. N. India.

smaragdipennis, Chaudoir, Ann. Soc. Ent. Fr., (3 s.) ix, 1859, p. 359 : *Mon.*, p. 375.
Hab. Sumatra, Mt. Singalang.

stricticollis, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) vi, 1886, p. 316.
Hab. Yunnan.

subsericatus, Fairmaire, l. c., p. 316.
Hab. Yunnan.

sycophanta, Fairmaire, l. c., p. 316.
Hab. Yunnan.

Xenos, Bates, Ann. Mag. N. H., (5 s.) xvii, 1886, p. 146.
Hab. Ceylon, Bogawantalawa.

Genus **PIRANTILLUS**.

Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1819, p. 108.

Feae, Bates, *l. c.*, p. 109.
Hab. Burma, Tenasserim, Meetan.

Genus **CAPHORA**.

Schmidt Goebel, Faun. Col. Birm., 1846, p. 91 : Lacord. Gen. Col., i, p. 309 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 76 : Mun. Cat., p. 146.

humilis, Schmidt Goebel, *l. c. supra*, p. 91, t. 3, f. 8 : Chaudoir, Bull. Mosc., li (3), 1876, p. 8.
Hab. Burma.

Genus **ANAULACUS**.

MacLeay, Annul. Javan., 1825, p. 22 : Lap. de Castelu., Hist. Nat. Ins., i, p. 123.
Aephnidius, MacLeay, Annul. Javan., 1825, p. 23 : Lap. de Castelu., Hist, Nat. Ins., i, p. 123 : Lacord., Gen. Col., i, p. 308 : Chaudoir, *Mon.*, p. 15.
Macracanthus, Chaudoir, Bull. Mosc., xix, 1846, p. 539 ; *id.*, *Mon.*, p. 23 : Lacord., Gen. Col., i, p. 265.
Masoreus, Dejean, Spec., iii, 1828, p. 536 : Lacord., Gen. Col., i, p. 140 : Mun. Cat., p. 145 : Zimmermann, *Mon.*, Gistl's Faunus, i, 1832, p. 119 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 76 : Motschulsky, Bull Mosc., xxxvii (3), 1864, p. 234 : Chaudoir, *Mon.*, *l. c.*, li (3), 1876, p. 11, 23, 25 : Bates, Biol. Centr. Amer. Col., i (i), p. 174.

adelioides (*Aephnidius*), MacLeay, Annul. Javan., 1825, p. 23, t, 1, f. 7 : Schmidt Goebel, Faun. Col. Birm., p. 88 : Lap. de Casteln., Hist. Nat. Ins., i, p, 123 : Bates, Trans. Ent. S. Lond., 1873, p. 307 : Chaudoir, *Mon.*, p. 17 : Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 110.

sericeus, Zimmermann, *Mon.*, 1832, p. 120 : Motsch., Bull. Mosc., xxxvi (3), 1864, p. 234 : Chaud., *Mon.*, p. 17.

Hab. Java, Bengal, Dekhan, Burma, Bhamo, Cochina China, Japan, W, Australia.

fasciatus (*Aephnidius*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 89 : Chaudoir, *Mon.*, p. 25.

var. *basalis*, Fleutiaux, Ann. Soc. Ent. Fr., (6 s.) vii, 1887, p. 59, 60, t. 4, f. 1.

Hab. Burma ; Annam, Hué.

fuscipennis (*Aephnidius*), Schmidt Goebel, *l. c.*, p. 89 : Chaudoir, *Mon.*, p. 16 : Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 110.

Hab. Burma, Bhamo, Shwegu, Tenasserim.

opaculus (*Masoreus*), Zimmermann, *Mon.* Carab., 1832, p. 120 : Chaudoir, *Mon.* p. 19.

Hab. India, Ceylon.

orientalis (*Masoreus*), Dejean, Spec., iii, 1828, p. 539 : Chaudoir, *Mon.* p. 14.

grandis, Zimmermann, *Mon.* Carab., 1832, p. 121.

laticollis, Chaudoir, Bull. Mosc., xvi (4), 1843, p. 778.

Hab. India, Egypt, Abyssinia.

pleuronectes (*Masoreus*), Zimmermann, *Mon.*, 1832, p. 120 : Chaudoir, *Mon.* p. 19.

Hab. India, Malabar, Coimbatore, Ceylon.

quadrimaculatus (*Aephnidius*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 90 : Chaudoir, *Mon.*, p. 25.

Hab. Burma.

sericans (*Masoreus*), Schmidt Goebel, *l.c. supra*, p. 87 ; Chaudoir, *Mon.*, p. 28 (*gen. dub.* near *Mochtherus*).

Hab. Burma.

sericipennis (*Anaulacus*), MacLeay, Annul. Javan., 1825, p. 22, t. 1, f. 4 : Lap. de Casteln., Hist. Nat. Ins., i, p. 123 ; Chaudoir, *Mon.*, p 25.

Hab. Java.

siamensis (*Masoreus*), Chaudoir, *Mon.*, p. 25.

Hab. Bangkok.

simplex (*Aephnidius*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 89 : Chaudoir, *Mon.*, p. 22 : Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 110.

Hab. Bengal, Malabar ; Burma, Bhamo, Mandalay.

Genus **PERIGONA.**

Lap. de Casteln,, Et. Ent., 1834, p. 15 : Chaudoir, Bull. Mosc., xliv (2), 1872, p, 281 : Putzeys, Ann. Mus, Civ. Gen., iv, 1873, p. 218 : Bates, Biol. Centr. Amer., Col., i (i), p. 133.

Masoreus, pt, Lacordaire, Gen. Col., i, p. 134.

Nestra, Motsch., Bull. Mosc., xxiv (4), 1851, p. 506 ; Et. Ent., 1859, p. 37 : Mun. Cat., p. 394.
Siltopia, Castelneau, Trans. R. S. Victoria, viii (2), 1868, p. 127.
Spathinus, Nietner, Ann. Mag. N. H. (3 s.), ii, 1858, p. 428 : Mun. Cat., p. 394.
Trechicus, Leconte, Trans. Amer. Phil. Soc. x, 1853, p. 386 : Lacord., Gen., Col., i, p. 393.

Beccarii, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 732.
var. *suffusa*, Bates, Ann. Mag. N. H., (5 s.) xvii, 1886, p. 151.
Hab. Borneo, Sarawak ; Ceylon.

convexicollis, Putzeys, Ann. Mus. Civ. Gen., vii. 1875, p. 729.
Hab. Johore, Malayan Peninsula.

fimicola, Wollaston, Ins. Mader., 1854, p. 63 : Ann. Mag. N. H., (3 s.) viii, 1862, p. 288 ; Col Hesperid. p. 27 : Bates Ann. Mag. N. H., (5 s.) xvii, 1886, p. 150.
Jansonianus, Wollaston, Ann. Mag. N. H., (3 s.) ii, 1858, p. 19.
Hab. Cape Verde Islands, Ceylon, Colombo.

livens, Putzeys, Ann. Mus. Civ. Gen., iv, 1873, p. 225.
Hab. ? Coromandel.

luzonica, Putzeys, *l. c.*, vii, 1875, p. 728.
Hab. Philippines, Manilla.

minor, Putzeys, *l. c.*, p. 734.
Hab. Borneo, Sarawak.

nigriceps (*Spathinus*), Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 429.
? =*fimicola*, Wollaston, *supra cit.*
Hab. Ceylon.

nigricollis (*Nestra*), Motsch., Bull. Mosc., xxiv (4), 1851, p. 506 : Putzeys, Ann. Mus. Civ. Gen., iv, p. 222.
Hab. Borneo, Sarawak, Ceylon.

nigrifrons (*Nestra*), Motsch., Et. Ent., 1859, p. 38, t. 1, f. 1 : Putzeys, *l. c. supra*, p, 220.
Hab. Ceylon, Galle (*Putzeys*), Bogawantalawa (*Bates*).

ruficollis (*Nestra*), Motsch., Bull. Mosc., xxiv (4) 1851, p. 506 : Putzeys, Ann. Mus. Civ. Gen., iv, p. 222 ; Bates, *l. c.*, (2 s.) vii, 1889, p. 104.
Hab. Ceylon Kandy (*Bates*), Borneo, Sarawak (*Putzeys*), Burma (*Bates*).

sinuaticollis, Bates, Ann. Mag N. H., (5s) xvii, 1886, p. 149.
Hab. Ceylon.

ANCHONODERINI :—Lacordaire, Gen. Col., i, 1854, p. 373 : Bates, Ent. Mon. Mag., viii, 1871, p. 29 : Horn, Cat. Carab., p. 144 : Leconte & Horn, Class. Col., 1883, p. 35.

Genus **LASIOCERA.**

Dejean, Spec., v, 1831, p. 283 : Brullé, Hist. Nat. Ins. Col., i, p. 142 : Chaudoir, Bull. Mosc., xxxii (2), 1850, p. 402 : Lacord., Gen. Col., i, p. 376 : Mun. Cat., p. 397.

orientalis, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 403.
Hab. N. India.

Genus **OCHTHEPHILUS**.

Nietner, Jl. As. Soc. Beng., xxvi, 1857, p. 136; *id.*, Ann. Mag. N. H., (2 s.) xx, 1857, p. 275 : Mun. Cat. p. 399.
Perileptus, Schaum, Nat. Ins., i, 1860, p. 663.

ceylanicus, Nietner, Jl. As. Soc. Beng., *l. c. supra.*, p. 137 : Ann. Mag. *l. c. supra* p. 276 : Putzeys, Stettin Ent. Zeit., xxxi, p. 362.
Hab. Ceylon.

Genus **SELINA**.

Motsch., Et. Ent., 1857, p. 110 : Schaum, Berlin Ent Zeits., vii, 1863, p. 74.
Steleodera, Schaum, Chaudoir, Bull. Mosc., xlv (i), 1872, p. 396.

Ritsemae, Oberthür, Notes Leyden Mus., v. 1883, p. 223.
Hab. E. Sumatra, Serdang.

Westermannii, Motschulsky, Et. Ent., 1857, p. 110, t. 1, f. 6 : Schaum, Berlin. Ent. Zeits., 1860, p. 172, t. 3, f. 11, *a. b.*
setosus (Pselaphanax), Walker, Ann. Mag. N. H., (3 s.) iii, 1859, p. 52 : Waterhouse, Aid Ident. Ins., t. 120.
Hab. India, Tranquebar ; Ceylon, Peradeniya *(Bates)* ; ? Madagascar, Natal.

HEXAGONINI *(Ctenodactylini)*, Horn, Gen. Carab., p. 145.

Genus **HEXAGONIA**.

Kirby, Trans. Linn. S. Lond., xiv, 1825, p. 563 : Brullé, Hist. Nat. Col., i, p. 476 ; Lacord., Gen. Col., 1, p. 69 : Schmidt Goebel, Faun. Col. Birm., p. 49 : Mun. Cat., p. 86 : Bates, Biol. Centr. Amer., Col., i (i), p. 158.
Trigonodactyla, Dejean, Spec. v, 1831, p. 288 : Chaud., Bull. Mosc., xxxiv (i), 1861, p. 532.

apicalis, Schmidt Goebel, Faun. Col. Birm., 1846, p. 51, t. 2, f. 1.
Hab. Calcutta (Kasipur).

Bowringii, Schaum, Berlin Ent. Zeits., 1863, p. 73, 433, t. 3, f. 8.
Hab. Penang.

brunnea, Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 531 : Schaum, Berlin Ent. Zeits, vii, 1863, p. 433.
Hab. N. India.

cephalotes *(Odacantha)*, Dejean, Spec.. ii. 1826, p. 439 : (*Trigonodactylus*) Guérin, Mag. Zool., 1833, cl. ix, p. 73 : Lap. de Casteln., Hist. Nat. Ins., i, p. 31.
Hab. India.

Kirbyii, Schmidt Goebel, Faun. Col. Birm., 1846, p. 51, t. 2. f. 2.
Hab. Darjiling.

longithorax *(Lebia)*, Wiedemann, Zool, Mag. ii (i), 1823, p. 58: Schaum, Berlin. Ent. Zeits., vii, 1863, p. 433.
Hab. India.

terminata, Kirby, Trans. Linn. S. Lond., xiv, 1825, p. 564 (*nec* Dejean): Brullé, Hist. Nat. Ins., Col, i, p. 227: Lap. de Casteln., Hist. Nat. An. Art., i, p. 46.
Hab. India.

ODACANTHINI (*Odontacanthini* Col. Hefte. vi, p. 114): Lacordaire, Gen. Col., i, p. 71: Horn, Gen. Carab., p. 147: Leconte & Horn., Class, Col., 1883, p. 38.

Genus **CASNONIA**.

Latreille, Ic. Col. Eur., i, 1822, p. 77: Lacord., Gen. Col., i, p. 72: Chaudoir, Bull. Mosc., xxi (i), 1848, p. 44; *id.*, *ib.*, xxxv (4), 1862, p. 275; xlv (i), 1872, p. 397: Mun. Cat., p. 86: Leconte, Bull. Brookl. Ent. S., ii, 1880, p. 85: Bates, Biol, Centr. Amer., Col., i, (i), p. 160.

Apiodera, Chaudoir, Bull. Mosc., xxi (i), 1848, p. 35: Lacord., Gen. Col., i. p. 72.
Lachnothorax, Motschulsky, Et. Ent., 1862, p. 48.
Ophionea, pt, Klug, Ent. Bras. Spec. prim, p. 298 (*nec* Eschsch).
Plagiorhytis, Chaudoir, Bull. Mosc., xxi (i) 1848, p. 31: Lacord, Gen. Col., i, p. 71.

? apicalis (*Odacantha*), Chaudoir, Bull. Mosc., xlv (i), 1872, p. 408.
Hab. Siam, Bangkok.

biguttata (*Lachnothorax*), Motsch., Et Ent., 1862, p. 50.
oculata, Chaudoir, Bull. Mosc., xxxv (4), 1862, p. 291.
Hab. India, Tranquebar; Siam.

bimaculata, Kollar, Hügel Kaschmir, iv (2), 1844, p. 498, t. 23, f. 2: Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 25.
Hab. Kashmir, Simla [*Ind. Mus.*].

celebensis, R. Gestro, Ann. Mus. Civ. Gen., vii 1875, p. 854.
Hab. Siam, Bangkok.

Chaudoirii (*Ophionea*), Bohemann, Freg. Eug. Resa Col., 1858, p. 2.
Hab. Hongkong [*Ind. Mus.*].

distigma, Chaudoir, Bull. Mosc., xxii, (i), 1850, p. 26; xlv (i), 1872, p. 407.
bimaculata, Schmidt Goebel, Faun. Col. Birm., 1846, p. 18 (*nec* Kollar).
Hab. Burma.

flavicauda, Bates, Trans. Ent. S. Lond., 1873, p. 303.
Hab. China, Fuchau, Japan.

fulvipennis, (*Odacantha*), Chaudoir, Bull. Mosc., xlv (i), 1872, p. 407: Bates, Trans Ent. S. Lond., 1883, p. 278.
Hab. Hongkong, ? Celebes.

fuscipennis Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 26; *id.*, xxxv (4), 1862, p, 289: Fairm., Ann. Soc. Ent. Fr., (6 s.) viii, 1888, p. 334.
Hab. India, Simla, Tranquebar, Siam, Malacca, Tonkin, Maccassar, China, Chusan.

haemorrhoidalis, Motsch., Bull. Mosc., xxxvii (3). 1864, p. 219: Chaudoir *l. c.* xlv (i), 1872, p. 404; lii (2), 1877, p. 266.
Hab. India, Ceylon, Colombo (*Bates*), Siam, Celebes, ? Chusan.

latifascia, Chaudoir, Bull., Mosc., xlv (i), 1872, p. 404.
Hab. India.

litura (*Odacantha*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 22: Chaudoir, Bull. Mosc., xlv (i), 1872, p. 405; lii (2), 1877, p. 266.
Hab. Burma, Java, Japan.

metallica, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) viii, 1888, p. 334.
Hab. Tonkin.

opacipennis, R. Gestro, Ann. Mus. Civ. Gen., (2 s.) vi, 1888, p. 107.
Hab. Burma, Bhamo.

pilifera, Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 179.
Hab. Ceylon.

punctata, Nietner, *l. c.*, *supra*, p. 178.
Hab. Ceylon.

subapicalis, Oberthür, Notes Leyden Mus., v, 1883, p. 216.
Hab. E Sumatra, Serdang.

tetraspilota, Schmidt Goebel, Faun. Col. Birm., 1846, p. 19.
Hab. Burma.

virgulifera, Chaudoir, Bull. Mosc., xlv (i), 1872, p. 403: Gestro, Ann. Mus. Civ. Gen., vii, p. 854.
Hab. Siam, Bangkok.

Genus **OPHIONEA**.

Eschsch., Zool. Atlas, ii, 1829, p. 5: Chaudoir, Bull. Mosc., xxi (i), 1848, p. 43; Lacord., Gen. Col., i, p. 73: Mun. Cat., p. 85.
Casnoidea, Lap de Casteln., Et., Ent., i, 1834, p. 40; *id.*, Hist. Nat. An. Ins., i, p. 28.

Beauchenii, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) viii, 1888, p. 333.
Hab. Tonkin.

cyanocephala (*Carabus*), Fabr., Ent. Syst. Suppl., 1798 p. 60: (*Casnonia*) Dejean Spec., i, p. 173; Lacord. Gen. Col. Atlas, t. 3. f. 2: Schmidt Goebel, Faun. Col. Birm., p. 20.
Hab. India, Ceylon, Colombo (*Bates*), Celebes, Japan, Hongkong [*Ind. Mus.*, Calcutta, S. India].

interstitialis, Schmidt Goebel, Faun. Col. Birm., 1846, p. 20.
Hab. Burma, Java, Soerabaya, Buitenzorg, Celebes.

nigrofasciata, Schmidt Goebel, *l. c.*, p. 21.
Hab. Burma, Ceylon, Colombo (*Bates*).

Genus **DICRASPEDA**.

Chaudoir, Bull. Mosc., xxxv (4), 1862, p. 300.

brunnea, Chaudoir, *l. c.*, p. 300.
Hab. Siam.

DRYPTINI:—Horn, Gen. Carab., p. 148 : Leconte & Horn, Class Col., 1883, p. 40 : Lacordaire (*Galeritidæ*), Gen. Col., i, p. 79.

Genus **DRYPTA**.

Fabricius, Syst. Eleuth., i, 1801, p. 230 : Brullé, Hist. Nat. Ins. Col., i, p. 163 : Lacord. Gen. Col., i, p. 75 : Mun. Cat., p. 90.

aeneipennis, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 109.
Hab. Burma, Bhamo.

amabilis, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 35 (? = *Dendrocellus id*).
Hab. India, Tibet.

crassiuscula, Chaudoir, *l.c.*, xxxiv (i), 1861, p. 550.
Hab. N. India.

dimdiata, Putzeys, Notes Leyden Mus., ii, 1880, p. 191 ; Mid. Sumatra, iv, 6, t. 2, f. 2.
Hab. Sumatra.

flavipes, Wiedemann, Zool. Mag., ii (i), 1823, p. 60 : Dejean, Spec., ii, p. 442 : Lap. de Casteln., Hist. Nat. An. Art., Ins., i, p. 34.
pallipes, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 33 ; *ib.*, (i), 1860, p. 548.
Hab. N. India, Simla.

formosana, Bates, Trans. Ent. S. Lond., 1873, p. 333 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 257.
Hab. Formosa.

lineola, Dejean, Spec., i, 1825, p. 184 : MacLeay, Annul. Javan., p. 27 : Lap. de Casteln., Hist. Nat. An. Art. Ins, i, p. 33 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 262.
var. *philippinensis*, Chaudoir, Bull. Mosc., lii (2), 1877, p. 262.
Hab. India, China, Hongkong, Philippines [*Ind. Mus.*, Madras].

lugens, Schmidt Goebel, Faun. Col. Birm., 1846, p. 23.
Hab. Burma.

mandibularis, Lap. de Casteln., Et. Ent., 1834, p. 43.
Hab. India, Borneo.

Mouhotii, Chaudoir, Rev. Mag. Zool., (2s.), xxiii, 1872, p. 102.
Hab. Laos.

obscura, Schmidt Goebel, Faun. Col. Birm., 1846, p. 23.
Hab. Burma.

tristis, Schmidt Goebel, *l.c.*, p. 23.
Hab. Burma.

virgata, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 34.
Hab. India.

Genus **DENDROCELLUS**.

Schmidt Goebel, Faun. Col. Birm., 1846, p. 24 : Lacord., Gen. Col., i, p. 80 : Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 545 : Mun. Cat. p. 91.
Desera (Leach), Hope, Col. Man. ii, p. 96, 105.

aeneipes (*Drypta*), Wiedemann, Zool. Mag., ii (i), 1823, p. 60.
Hab. India.

discolor, Schmidt Goebel, Faun. Col. Birm., 1846, p. 24.
Hab. Burma, Martaban [*Ind. Mus.*, Dhansiri Valley, Assam].

geniculatus, Klug, Jahrb. Insec., i, 1834, p. 52 : Schmidt Goebel, *l.c.*, *supra*, p. 25.
Hab. India, Assam, Burma, Malacca, Java, Japan.

longicollis (*Drypta*), Dejean, Spec., i, 1825, p. 185.
Hab. India.

nepalensis (*Desera*), Hope, Gray's Zool. Misc., 1831, p. 21.
flavipes, Schmidt Goebel, Faun. Col. Birm., 1846, p. 24 : *nec* Wied. *nec* Dejean. Calcutta.
rugicollis, Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 546.
Hab. Nepal, Calcutta, Burma.

parallelus, Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 101.
Hab. Sumatra.

unidentatus (*Drypta*), MacLeay, Annul. Javan., i, 1825, p. 28.
coelestinus, Klug, Jahrb. Insect., i, 1834, p. 54.
Hab. Java.

Genus **GALERITA.**

Fabr., Syst. Eleuth., i, 1801, p. 214 : Brullé, Hist. Nat. Ins. Col., i, p. 166 : Schmidt Goebel, Faun. Col. Birm., p, 62 : Lacord., Gen. Col., i, p. 82 : Mun. Cat., p, 92, Leconte, Bull. Brookl. Ent. S., 1879, ii, p. 61 : Bates, Biol. Centr. Amer. Col., i (i), p. 164.

attelaboides (*Carabus*), Fabr., Spec. Ins., i, 1781, p. 305 ; Mant. Ins., i, p. 198 ; Ent. Syst., i, p. 132 ; Syst. Eleuth., i, p. 214 : Oliv., Ent., iii, 35, p. 50, t. 6, f. 70 : Chaudoir, Bull. Mosc., xxiv (i), 1861, p. 560.
? *leptodera*, Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 559.
Hab. India, (not S. America).

indica, Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 557.
Hab. N. India.

nigripennis, Chaudoir, *l.c.* p. 557.
Hab. Dekhan.

orientalis, Schmidt Goebel, Faun. Col. Birm., 1846, p. 26 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 109.
Hab. Burma, Bhamo.

peregrina, Dohrn, Stettin. Ent. Zeit., xli, 1880, p. 291.
Hab. Hongkong.

ruficeps, Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 556 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 109.
Hab. N. India ; Burma, Bhamo.

Genus **ZUPHIUM.**

Latreille, Gen. Crust, & Ins., i, 1806, p. 198 : Lap. de Casteln., *Monograph*, Silb. Rev. i, p. 251 : Lacord., Gen Col., i, p. 85 : Brullé, Hist. Nat. Ins. Col., i, p. 174 : Mun. Cat., p. 98 : Chaudoir, Bull Mosc., xxxv (4), 1862, p. 310 : Leconte, Bull. Brookl. Ent. Soc., 1879, p. 61 : Bates, Biol. Centr. Amer Col., i (i), p. 166.
Zophium, Schmidt Goebel, Faun. Col. Birm., 1846, p. 27.

bimaculatum, Schmidt Goebel, Faun, Col. Birm., 1846, p. 28 : Chaudoir, Rev. Mag. Zool., 1872, p. 105.
vittigerum, Schmidt Goebel, Faun. Col. Birm., 1846, p. 28.
Hab. Burma, Martaban [*Ind. Mus.*, China].

erythocephalum, Chaudoir, Bull. Mosc., xxxv (2), 1862, p. 311.
Hab. India, Malabar.

inconspicuum, Schmidt Goebel, Faun. Col. Birm., 1846, p. 30.
Hab. Burma.

modestum, Schmidt, Goebel, *l. c.*, p. 29.
Hab. N. India, Burma.

olens (*Carabus*), Fabr., Ent. Syst., i, 1792, p. 139 ; *id.* (*Galerita*), Syst. Eleuth., i, p. 215 : Olivier, Ent., iii, 35, p. 94, t. 13, f. 156 : (*Zuphium*) Dejean, Spec., i, p. 192 ; *id.*, Ic. Col. Eur. i, t. 10., f. 3 : Brullé, Hist. Nat. Ins. Col., i, p. 175, t. 6, f. 1 : Lap. de Casteln., *Mon.*, p. 253 : Schmidt Goebel, Faun. Col. Birm., p. 28 ; Duval, Gen. Carab., t. 21, f. 105 : Chaudoir, Bull. Mosc., xxxv (4), 1862, p. 311.
longiusculum, Chaudoir, Bull. Mosc., xv (4), 1842, p. 804 : *id*, xxxv (4), 1862, p. 312.
rufifrons, Chaudoir, *l. c.*, (4), 1862, p. 311.
Hab. S. Europe, N. Africa, Asia Minor, Maulmain, Siam.

piceum, Schmidt Goebel, Faun. Col. Birm., 1846, p. 29.
Hab. Burma.

pubescens, Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 182.
Hab. Ceylon.

siamense, Chaudoir, Rev. Mag. Zool., (2 s), xxiii, 1872, p. 104.
Hab. Siam.

Genus **AGASTUS.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 30 ; Lacord., Gen. Col., i, p. 87 : Mun. Cat., p. 95.

lineatus, Schmidt Goebel, *l. c.*, p. 91.
Hab. Burma.

ustulatus, R. Gestro, Ann. Mus. Civ. Gen., vii, 1875, p. 876.
Hab. Singapur.

MORMOLYCINI, Horn, Gen. Carab., p. 149.

Genus **MORMOLYCE.**

Hagenbach, Nov. Gen. Col., 1825 : Brullé, Hist. Nat. Ins. Col., i, p. 310 : Lacord., Gen. Col. i, p. 144 : Mun. Cat., p. 152 ; Gestro, Ann. Mus. Civ. Gen., vii, 1875, p. 886.

Castelnaudii, Deyrolle, Ann. Soc. Ent. Fr., (2s.) iv, 1862, p. 314, t. 11, f. 3.
Hab. Malacca.

Hagenbachii, Westwood, Ann. Mag. N. H., (3*s*.) ix, 1862, p. 96 : Deyrolle, *l. c. supra*, p. 313, t, 11, f. 2.
blattoides, Thomson, *Mon.* Mormolyce, 1862, p. 8.
Hab. Sumatra.

phyllodes, Hagenbach, Nov. Gen. Col., 1825, fig. *a-b.* : Gray, Griffith's Anim, Kingd., Ins. i, 1832, t. 25, f. 7 : Brullé, Hist. Nat. Ins., Col. i, p. 313, t. 11, f. 2 : Lap. de Casteln., Hist. Nat. Ins., i. p. 119, t. 7, f. 3 : Deyrolle, *l. c. supra*, t. II., f. 1 : Verhuel., Ann. Soc. Ent. Fr., 1847, p. 344, t. 7, f. 1-6 : Overdijk, Mèm. Ent. S. Pays-Bas, i, 1857, p. 41.
var. *borneensis*, Gestro, Ann. Mus. Civ. Gen., vii, 1875, p. 886, fig.
Hab. Java, Borneo, ? New Guinea [*Ind Mus.*, Singapur].

LEBIINI:—Horn, Trans. Amer. Ent. Soc., x, 1882, p. 126 : Gen. Carab., p. 155 : Leconte & Horn, Class. Col., p. 42.

Lebiides, pt, Lacordaire, Gen. Col., i, p. 102.

Pericalides, Lacordaire, *l. c.*, p. 137.

Includes *Tetragonoderini*, Chaudoir, Bull. Mosc., li (3), 1876, p. 28.

Genus **CYCLOSOMUS**.

Latreille, Règne Anim., ii., 1829, p. 394 : Dejean, Spec., iv, p. 23 : Lacord. Gen. Col., i, p. 258 : Mun. Cat., p. 248 : Chaudoir, Bull. Mosc., li (3), 1876, p. 29.

dytiscoides (*dyticoides*), Nietner, Jl. As. Soc. Beng., xxvi, 1857, p. 132 : Ann. Mag. N. H., (2s.) xx, 1857, p. 272 : Chaudoir, Bull. Mosc., li (3), 1876, p. 31.
Hab. Ceylon, Colombo.

flexuosus, Fabricius, Syst. Ent., 1775, p. 246 ; Spec. Ins., i, p. 311 ; Mant. Ins., i, p. 203 ; Ent. Syst., i, p. 180 ; (*Scolytus*) Syst. Eleuth., i, p. 247 : Lap. de Casteln., Hist. Nat. Ins., i, p. 96 : Lacord. Gen. Col. : Atlas, t. 10, f. 4 *a-b.* : Gray, Griffith, An. Kingd., Ins. i, 1832, t. 8, f. 12 : Brullé, Hist. Nat. Ins. Col., ii, p. 140 : Chaudoir, Bull. Mosc., li (3), 1876, p. 32.
suturalis (Scolytus), Wiedemann, Zool. Mag., i (3), 1819, p. 169.
Hab. Bengal, Hongkong.

marginatus, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 200 : Chaudoir, *ib.*, li (3), 1876, p. 32.
Hab. India.

Genus **TETRAGONODERUS**.

Dejean, Spec., iv, 1829, p. 485 : Schmidt Goebel, Faun. Col. Birm., p. 92 : Lacord., Gen. Col., i, p. 132 : Mun. Cat., p. 144 : Chaudoir, *Monograph*, Bull, Mosc., li (3), 1876, p. 33 : Syn. Amer. Sp., Horn, Trans. Amer. Ent. S., iv, 1872, p. 136 : Bates, Biol. Centr. Amer., Col., i (i), p. 171.
Carabus, Fabr. *et vet. auct* : *Bembidium*, Wied., Germar : *Dromius*, Reiche, Putzeys, Dejean.
Peronoscelis, Chaudoir, *Mon.*, p. 56.

arcuatus, Dejean, Spec., iv, 1829, p. 495 : Chaudoir, *Mon.*, p. 38.
Hab. India, Egypt, Senaar.

cursor, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 201.
Hab. Ceylon, Kandy.

dilatatus *(Bembidium)*, Wiedemann, Zool. Mag., ii (i), 1823, p. 61 ; Chaudoir, *Mon.*, p. 41.
Hab. India, Bengal.

discopunctatus, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 456 ; *id.*, *Mon.*, p. 48.
Hab. N. India, Simla.

fimbriatus, Bates, Ann. Mag. N. H., (5 s.) xvii, 1886, p. 202.
Hab. Ceylon, Kandy.

notaphioides, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 99 : Bates, *l. c. supra*, p. 201 : Chaud., *Mon.* p. 54.
Hab. Ceylon, Colombo, Dikoya.

punctatus *(Bembidium)*, Wiedemann, Zool. Mag., ii (i), 1823, p. 61 : Dejean, Spec. iv, p. 505 : Schmidt Goebel, Faun. Col. Birm., p. 92 : Chaud., *Mon.* p. 48.
Hab. India, Bengal, Dekhan.

quadrinotatus *(Carabus)*, Fabr., Ent. Syst. Suppl., 1798, p. 55 ; *id.*, Syst. Eleuth. i, p. 186 ; Dejean, Spec., iv, p. 491 : Lap. de Casteln., Hist. Nat. Ins., i, p. 89 : Chaud., *Mon.*, p. 41.
Hab. India, Ceylon [*Ind. Mus.*].

quadrisignatus, Quensel, Schönherr, Syn. Ins., i, 1806, p. 212 note : Dejean, Spec. iv, p. 491 : Chaud., *Mon.*, p. 41.
Hab. India, Hongkong [*Ind. Mus.*, Madras].

rhombophorus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 93 : Chaud., *Mon.*, p. 48.
Hab. Burma, Martaban.

trifasciatus, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 455 ; *id.*, *Mon.*, p. 48.
Hab. N. India.

Genus **MNUPHORUS.**

Chaudoir, Berlin. Ent. Zeits., 1873, p. 55 ; *id.*, Bull. Mosc., li (3), 1876, p. 69.

discophorus, Chaudoir, *l.c.*, p. 69.
Hab. N. India, Simla.

Genus **TILIUS.**

Chaudoir, Bull. Mosc., li (3), 1876, p. 71.
Lionychus, Chaudoir, *olim* (*nec* Wissmann).

holosericeus, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 68 ; *id.*, li (3), 1876, p. 72.
Hab. N. Bengal.

Genus **DICTYA.**

Chaudoir, Bull. Mosc., xliii, (2), 1870, p. 116, 123.

cribricollis, Morawitz, Bull. Ac. Petr., v. 1863, p. 245 : Chaudoir, *l. c. supra*, p. 124.
Hab. E. Siberia, N. China, Canton (*Putzeys.*).

Genus **NEMATOPEZA.**

Chaudoir, Bull. Mosc., xliii (2), 1870, p. 146.

Baconii, Chaudoir, *l. c. supra*, p. 150.
Hab. N. India.

basalis (*Lebia*), Chaudoir, *l. c.*, xxv (i), 1852, p. 43 ; *id., ib.*, xliii (2), 1870, p. 149.
Hab. N. India.

decora, Chaudoir, *l. c.*, xliii (2), 1870, p. 150.
Hab. N. India.

Genus **LEBIA.**

Latreille, Hist. Nat. Ins., viii, 1804, p. 247 : Lacord., Gen. Col., i, p. 127 : Mun. Cat., p. 136 : Motsch., Bull. Mosc., xxxvii (3), 1864, p. 226, *tab. syn.* : Chaudoir, *l.c.*, xliii (2), 1870, p. 111, 162 : Bates, Biol. Centr. Amer., Col., i (i), p. 222.

Echimuthus, Leach, Endinb. Encycl., 1818.
Homalops, Motschulsky, Käfer Russl, 1845, p. 42.
Lamprias, Bonelli, Obs. Ent., 1809, *tab syn.*
Lebida, Motschulsky, Et. Ent., 1862, p. 51 ; *id.*, Bull. Mosc., xxxvii (3), 1864, p. 225.
Lebistina, Motschulsky, Bull. Mosc., *l.c.*, p. 227 : Chaud., *l.c.*, lii (2), 1877, p. 218.
Lionedya, Chaudoir, Bull. Mosc., xliii (2), 1870, p. 126.
Omalomorpha, Motschulsky, Ins. Sib., 1842, p. 42.

Boysii, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 70 ; xliii (2), 1870, p. 223.
Hab. N. India, Simla.

calycophora, Schmidt Goebel, Faun. Col. Birm., 1846, p. 44.
Hab. Burma.

chinensis, Bohem., Freg. Eug. Resa, Col., 1858, p. 6 : Chaud., Bull. Mosc., xliii (2), 1870, p. 163.
Hab. Hongkong [*Ind. Mus.*, China.].

circumdata, Schmidt Goebel, Faun. Col., Birm., 1846, p. 44 : Chaud., Bull. Mosc., xliii (2), 1870, p. 224.
Hab. Burma.

elevata (*Carabus*), Fabr., Ent. Syst., i, 1792, p. 162 ; Syst. Eleuth., i, p. 204 : Chaudoir, Bull. Mosc., xxvii (i) 1854, p. 133 : Schmidt Goebel, Faun. Col., Birm., p. 43.
massiliensis, Fairmaire, Ann. Soc. Ent. Fr. 1849, p. 419 : Brullé, Silb. Rev., ii, p. 108.
unifasciata, Dejean, Spec., v, 1831, p. 389.
Hab. S. Europe, Burma.

exsanguis, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 209.
Hab. Ceylon, Dikoya.

fuscula, Chaudoir, Bull, Mosc., xliii (2), 1870, p. 221.
Hab. India, Simla.

gressoria, Chaudoir, *l.c.*, p. 222.
Hab. N. India.

infuscata, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 227.
Hab. India.

sellata, Schmidt Goebel, Faun. Col. Birm., 1846, p. 45.
Hab. Burma.

tau, Schmidt Goebel, l.c., p. 45.
Hab. Burma.

Genus **STEPHANA**.

Chaudoir, Bull. Mosc., xliv (i), 1871, p. 55.

princeps (*Lebia*), Chaudoir, *l.c.*, xxv (i), 1852, p. 41 ; *id*, xliv (i), 1871, p. 56.
Hab. N. India.

Genus **PHYSODERA**.

Eschscholtz, Zool. Atlas, ii, 1829, p. 8 : Schmidt Goebel, Faun. Col. Birm., p. 46 ; Lacord., Gen. Col., i, p. 130 ; Mun. Cat,, p. 143.

Davidis, Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 92.
Hab. China, Fuhkien.

Dejeanii, Eschscholtz, Zool. Atlas, ii, 1829, p. 8, t. 8, f. 6 : Gray, Griffith's Anim. Kingd. Ins., i, t. 19 f. 4 : Lacord., Gen. Col., i, p. 130, Atlas, t. 4, f. 3 : Schmidt Goebel, Faun. Col. Birm., p. 46.
Hab. Burma ; Philippines, Manilla [*Ind. Mus.*, Andamans].

Eschscholtzii, Parry, Trans. Ent. S. Lond., v, 1849, p. 179, t. 18, f. 2.
Hab. Ceylon, Peradeniya (*Bates.*).

Genus **EUPLYNES**.

Schmidt Goebel, Faun. Col. Birm., 1846, p. 52 : Lacord., Gen. Col., i, p. 131 : Mun. Cat., p. 380 : Bates, Trans. Ent. S. Lond., 1883, p. 264 ; *id.*, Biol. Centr. Amer Col., i (i), p. 158.

bispinus, Motschulsky, Et. Ent., 1859, p. 33.
Hab. Java.

cyanipennis, Schmidt Goebel, Faun. Col. Birm., 1846, p. 52 : Bates, Ann. Mag. N. H., (5s.) xvii, p. 147.
Schmidtii, Chaudoir, Ann. Soc. Ent. Fr., (3s.) vii, 1859 p. 360.
Hab. India, Burma.

Dohrnii, Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 429 : Bates, l. c.,(5s.) xvii, 1886, p. 147.
Hab. Ceylon.

Genus **ALLOCOTA**.

Motschulsky, Et. Ent., 1859, p. 29 : Mun. Cat., p. 146 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 203,

viridipennis, Motsch., Et. Ent., 1859, p. 29, f. 3 : Chaudoir, *l.c. supra*, p. 205.
Hab. Singapur, Malacca, Java.

Genus **PARENA.**

Motschulsky, Et. Ent., 1859, p. 31 : Mun. Cat., p. 146 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 207.

bicolor, Motschulsky, Et. Ent., 1859, p. 32.
Hab. Java.

Genus **LACHNODERMA.**

W. MacLeay, Trans. Ent. S. N. S. Wales, ii, 1873, p. 321 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 212 : R. Gestro, Ann. Mus. Civ. Gen., vii, 1875, p. 858.

hirsutus (*Singilis*), Bates, Trans. Ent. S. Lond , 1873, p. 333 ; *ib.*, 1883, p. 285.
Hab. Hongkong.

Genus **SCALIDION.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 63 : Lacord., Gen. Col., i, p. 135 : Mun. Cat., p. 147.

hilare, Schmidt Goebel, *l.c. supra*, p. 64.
Hab. Burma.

Genus **COPTODERA.**

Dejean, Spec., i, 1825, p. 273 : Lacord., Gen. Col., i, p. 140 : Mun. Cat., p. 149 : *Mémoire*, Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 163.
Agonocheila, Chaudoir, Bull. Mosc., xxi, 1848, p. 119.
Belonognatha, Chaudoir, *l. c.*, xvi (3), 1843, p. 383 : Lacord., Gen. Col., i, p. 142.
Rhinotheila, Montrouzier, Ann. Soc. Linn. Lyon, 1864, p. 57 : Mun. Cat., p. 141.

bicincta, Hope, Trans. Ent. S. Lond., iv, 1845, p. 14 : Chaudoir, *Mém.*, p. 187.
Hab. Canton, Hongkong.

discoguttata, Chaudoir, *Mém*, 1868, p. 195.
Hab. Borneo, Celebes.

elegantula, Schmidt Goebel, Faun. Col. Birm., 1846, p. 54 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 111.
Hab. Burma, Bhamo, Teintso, Tenasserim.

flexuosa, Schmidt Goebel, *l.c.*, p. 55 : Chaudoir, *Mém.*, p. 196.
Hab. Burma, Singapur, Borneo.

interrupta, Schmidt Goebel, *l.c.*, p. 53 : Chaudoir, *Mém.*, p. 194.
Hab. Burma, Siam, Borneo, Ceylon, Colombo (Bates).

ocellata, Chaudoir, *Mém.*, p. 188.
Hab. N. India.

transversa, Schmidt Goebel, Faun. Col. Birm., 1846, p. 54 : Chaudoir, *Mém.*, p. 165.
Hab. Burma.

tetrastigma, Chaudoir, *Mém.*, p. 174.
Hab. Borneo, Sarawak.

piligera, Chaudoir, Col. Novit., 1883, p. 20.
Hab. Tibet, Moupin.

Genus **LIOPTERA**.

Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 208.

Plato, Bates, Trans. Ent. S. Lond., 1883, p. 281, note.
Hab. N. Borneo.

quadriguttata, Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 208.
Hab. Philippines.

Genus **MOCHTHERUS**.

Schmidt Goebel, Faun. Col. Birm., 1846, p. 76 : Lacord., Gen. Col., i, p. 137 : Mun. Cat., p. 147 : Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., xii, 1868, p. 240.
Dromius, pt. MacLeay.
Thyreopterus, pt, Dejean, Spec., v, 1831, p. 445.
Cyrtopterus, pt, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 106.

immaculatus, Redtenb., Reise Novara, Zool., ii, Col., 1867, p. 7 : Chaudoir, *Mém.*, p. 243.
Hab. Malacca, Java.

tetraspilotus (*Dromius*), MacLeay, Annul. Javan., 1825, p. 25 : Schaum, Berlin Ent. Zeits., 1860, p. 187 : Chaudoir, *Mém.*, p. 241.
angulatus (*Mochtherus*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 76.
quadrinotatus (*Cyrtopterus*), Motsch., Bull. Mosc., xxxiv (i), 1861, p. 106 : Gerst., Wiegmann Archiv. Naturg., 1863, p. 75.
retractus (*Panagaeus*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 203.
tetrasemus (*Thyreopterus*), Dejean, Spec., v, 1831, p. 448.
Hab. India, Malabar, Burma, Java, Borneo, Ceylon, Colombo, Galle (*Bates*), [*Ind. Mus.*, Andaman Islands].

Genus **DOLICHOCTIS**.

Schmidt Goebel, Faun. Col. Birm., 1846, p. 62 : Lacord., Gen. Col., i, p. 136 : Mun.. Cat., p. 147 : Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., xii, 1868, p. 245.
Cyrtopterus, pt, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 106.
Coptodera, pt. Dejean.

angulicollis, Chaudoir, *Mém.*, p. 250.
Hab. Burma, Rangoon.

fasciola, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 205.
Hab. Ceylon, Balangoda.

gilvipes, Dejean, Spec. v, 1831, p. 396 : Chaud., *Mém.*, p. 248.
Hab. Philippines, Manilla.

gonioderus, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 204.
Hab. Ceylon, Kitugalle.

marginifer (*Dromius*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 202 ; id, Bates, *l.c. supra*, p. 210.

parvicollis, Chaudoir, *Mém.*, p. 249.
Hab. Borneo.

quadriplagiata, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 106, t. 9, f. 4 : Chaudoir *Mém.* p. 245.
marginicollis (*Colpodes*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 51.
Hab. Ceylon, Anarajapura.

rotundatus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 77 : Chaud., *Mém.* p. 241, 246 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1882, p. 111.
Hab. Burma, Bhamo, Teintso, Shwegu.

striata, Schmidt Goebel, Faun. Col. Birm., 1846, p. 62 : Chaudoir, *Mém.* p. 246.
Hab. Burma, Isl. Aru, ? Celebes.

tenuilimbata, Oberthür, Notes Leyden Mus , v, 1883, p. 219.
Hab. Sumatra, Serdang.

tetracolon, Chaudoir, *Mém.*, p. 248.
Hab. Borneo, Sarawak [*Ind. Mus.*, Sikkim].

vitticollis, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 204.
Hab. Ceylon, Dikoya.

Genus **BRACHYCTIS**.

Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 252.

rugulosa, Chaudoir, *l.c.*, p. 252.
Hab. Borneo, Sarawak.

Genus **PELIOCYPAS**.

Schmidt Goebel, Faun. Col. Birm., 1846, p. 33 : Lacord., Gen. Col., i, p. 116 : Mun. Cat. p. 127.

hamatus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 35.
Hab. Burma.

luridus, Schmidt Goebel, *l.c.*, p. 35.
Hab. Burma.

signifer, Schmidt Goebel, *l.c* , p. 35 : Bates, Ann. Mag. N. H. (5s.) xvii, p. 209.
Hab. Burma.

suturalis, Schmidt Goebel, *l.c.*, p. 34.
Hab. Burma.

uniformis, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) viii, 1888., p. 334.
Hab. Tonkin.

Genus **DROMIUS.**

Bonelli, Obs. Ent., i, 1809, tabl. syn : Lacord., Gen. Col., i, p. 119 : Mun. Cat, p. 128 : Schaum, Ins. Deutschl., i (i), p. 263.

Crossonychus, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 97.
Lobius, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 230.
Microlestes, Schmidt Goebel, Faun. Col. Birm., 1846, p. 41.
Philorhizus, Hope, Col. Man., 1838, p. 66.

exilis (*Microlestes*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 42.
Hab. Burma.

inconspicuus (*Microlestes*), Schmidt Goebel, *l.c.*, p. 41.
Hab. India.

orthogonioides, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 205.
Hab. Ceylon, Dikoya.

steno, Bates, *l.c.*, p. 206.
Hab. Ceylon, Nuwara Eliya.

Genus **BLECHRUS.**

Motschulsky, Bull. Mosc., xx (3), 1847, p. 219 ; xxi (2), 1848, p. 543 ; Et. Ent., 1858, f. 2, 3 : Mun. Cat., p. 131.

xanthopus, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 206.
Hab. Ceylon, Colombo.

Genus **METABLETUS.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 38 : Chaudoir, Bull. Mosc., xxi (i), 1848, p. 94 : Lacord., Gen. Col., i, p. 122 : Mun. Cat., p. 132.

Bomius, pt., Leconte, Ann. Lyc. Nat. Hist. New York., v, 1852, p. 177 : Lacord., Gen. Col., i, p. 120.
Charopterus, Motsch., Et. Ent., 1858, p. 155.
Dromoceryx, Schmidt Goebel, Faun. Col. Birm., 1846, p. 40.

angularis (*Dromoceryx*), Schmidt Goebel, *l.c.*, p. 41.
Hab. Burma.

dorsalis (*Dromoceryx*), Schmidt Goebel, *l.c.*, p. 40.
Hab. Burma.

quadripunctatus, Schmidt Goebel, *l.c.*, p. 39 : Bates, Trans. Ent. S. Lond., 1883, p. 284.
Hab. Bengal, Japan.

* **tartareus**, Bates, Proc. Zool. S. Lond., 1878, p. 719.
Hab. Between Yangi Hissar and Sirikol [*Ind. Mus.*, type].

Genus **APRISTUS.**

Chaudoir, Enum. Carab. Caucas., 1846, p. 62 : *id.*, Bull. Mosc., xxiii (i), 1850, p. 65 : Lacord. Gen. Col., i. p. 123 : Mun. Cat., p. 134.

aeneipennis (*Lionychus*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 37 : Fairm. Ann. Soc. Ent. Fr., (6s.) viii, 1888, p. 335.
Hab. Burma, Tonkin.

aeneomicans, Chaudoir, Bull. Mosc. xxiii (i), 1850, p. 66.
Hab. N. India, Simla.

subtransparens, Motsch., Bull. Mosc. xxxiv (i), 1861, p. 104: Bates, Ann. Mag. N.H., (5s.) xvii, 1886, p. 206.
Hab. Ceylon, Nuwara Eliya, Hadley, Dikoya (Bates).

Genus **APRISTOMORPHUS.**

Motschulsky, Bull. Mosc, xxxiv (i), 1861, p. 104.

sexpunctatus, Motschulsky, *l.c.*, p. 105, t. 9, f. 2.
Hab. Ceylon, Nuwara Eliya.

Genus **LIONYCHUS.**

Wissmann, Stettin Ent. Zeit., vii, 1846, p. 25 ; Lacord., Gen. Col., i, p. 122 : Mun. Cat., p., 133 : Schmidt Goebel, Faun. Col. Birm., p. 36.

albivittis, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 207.
Hab. Ceylon, Peradeniya.

marginellus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 37, t. 3, f. 3.
Hab. Burma.

Genus **TETRAGONICA.**

Motschulsky, Et. Ent., 1859, p. 26 ; Mun. Cat., p. 136 ; Bates Ann. Mag. N. H., (5s.) xvii, 1886, p. 207.

catenata, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 208.
Hab. Ceylon, Bogawantalawa.

euproctoides, Bates, *l.c.*, p. 209.
Hab. Ceylon, Colombo.

fusca, Motschulsky, Et. Ent., 1859, p, 28, t. 1, f. 2.
Hab. Ceylon, Nuwara Eliya, Dikoya, Bogawantalawa (*Bates*).

intermedia, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 208.
Hab. Ceylon, Horton Plains.

mellea, Bates, *l.c.*, p. 208.
Hab. Ceylon, Colombo.

repandens, Walker, Ann. Mag. N. H., (3s.) iii, 1859, p. 51 : Bates, *l.c. supra*, p. 210.
Hab. Ceylon.

Genus **BRACHICHILA.**

Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., 1868, p. 123.

hypocrita, Chaudoir, Mém., *l.c.*, p. 123.
Hab. Hongkong.

Genus **TANTILLUS.**

Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg, 1868, p. 126.

brunneus, Chaudoir, Mém., *l.c.*, p. 126.
Hab. Ceylon, Dikoya (*Bates*).

vittatus, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 202.
Hab. Ceylon, Bogawantalawa.

Genus **SINURUS**.

Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., xii, 1868, p. 129.

opacus, Chaudoir, *Mémoire*, p. 130.
Hab. Borneo, Sarawak.

Genus **SERRIMARGO**.

Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., xii, 1868, p, 134.
Thyreopterus, pt. Schaum, Chaudoir *olim*.

guttiger, Schaum, Berlin. Ent. Zeits., iv, 1860, p. 189, t. 3. f. 5 : Chaudoir, *Mém.* p. p. 135.
Hab. Borneo, Sarawak, Malacca.

verrucifer, Chaudoir, Rev. Mag. Zool, (2s.) xxi, 1869, p. 171 ; Mém., p. 135.
Hab. Malacca.

Genus **PERIPRISTUS**.

Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., xii, 1868, p. 135.

ater (*Thyreopterus*), Lap. de Casteln., Et. Ent., 1834, p. 149 : Schmidt Goebel, Faun. Col. Birm., p. 79 ; Chaudoir, *Mém.*, p. 136 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 110.
Hab. Burma, Malacca, Bhamo, Tenasserim.

Genus **THYREOPTERUS**.

Dejean, Spec., v, 1831, p. 445 : Lacord., Gen. Col., i, p. 143 : Schaum, Berlin. Ent. Zeits., iv, 1860, p. 186 : Mun. Cat., p. 151 : Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., xii, 1868, p. 141.
Thysanotus, Chaudoir, Bull. Mosc., xxi (i), 1848, p. 123.

impressus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 80 : Chaudoir, *Mém.*, p. 142 : *gen. dub.*
Hab. Burma.

Genus **MISCELUS**.

Klug, Jahrb. Insect., 1834, p. 82 : Lap. de Casteln., Hist. Nat. An. Art. Ins, i, p. 311 : Lacordaire, Gen. Col., i, p. 146 : Chaudoir, Berlin. Ent. Zeits., iv, 1861, p. 125 : *id.*, Ann. Soc. Ent. Belg., xii, 1868, p. 152 : Mun. Cat., p. 154.
Leptodactyla, Brullé, Hist. Nat. Ins., iv, 1837, p. 130.

convexicollis, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 724.
Hab. Borneo, Sarawak.

javanus, Klug, Jahrb. Insect., 1834, p. 82, t. 1, f. 9 : Lap. de Casteln., Hist. Nat. An. Art. Ins., i, p. 32 : Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 723.
apicalis (*Leptodactyla*), Brullé. Hist. Nat. Ins., iv, 1837, p. 130, t. 4, f, 1.
Hab. Java, Borneo, Sarawak [*Ind. Mus.*, Andaman Islands].

paradoxus, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 724.
Hab. Philippines

rufiventris, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 202.
ceylonicus, Chaudoir, Berlin Ent. Zeits.. v, 1861, p. 125.
Hab. Ceylon, Colombo (*Bates*).

unicolor, Putzeys, Mèm. Soc. Liège, ii, 1845, p. 375 ; *id.*, Ann. Mus. Civ. Gen., vii, 1875, p. 725.
Hab. Java.

Genus **HOLCODERUS**.

Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 153.

auripennis, Chaudoir, Bull. Mosc., lii (2), 1877, p. 198.
Hab. Penang.

limbipennis, Chaudoir, *l.c.*, p. 199.
Hab. Penang.

praemorsus, Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 153.
Hab. Ceylon, Dikoya, Bogawantalawa (*Bates*).

Genus **CATASCOPUS**.

Kirby, Trans. Linn. S. Lond., xiv, 1825, p. 94 : Schmidt Goebel, Faun. Col. Birm., p. 80 : Lacord., Gen. Col., i, p. 145 : Mun. Cat., p. 152 : W. W. Saunders, Trans. Ent. S. Lond., (3s.) i, 1863, p. 455 : Chaudoir, Bull. Mosc., xxi (i), 1848, p. 113. ; *id.*, Berlin. Ent. Zeits., v, 1861, p. 116 ; *id.*, Ann. Soc. Ent. Belg., xii, p. 158.
Cyphosoma, Hope, Ann. Mag. N., H., ix, p. 426.

aeneipennis, Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 118.
Hab. Dekhan.

aeneus, Saunders, Trans. Ent. S. Lond., 1863, p. 467, t. 17, f. 2 *a-b*.
Hab. Borneo, Sarawak.

aequatus, Dejean, Spec., v. 1831, p. 452 : Lap. de Casteln., Hist. Nat. Ins., i, p. 54.
Hab. Philippines, Manilla.

andamanensis, Chaudoir, Bull. Mosc., lii (2), 1877, p. 200.
Hab. Andaman Islands.

angulatus, Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 117.
elegans, MacLeay, Annul. Javan., 1825, p. 15 (*nec Fabr.*).
facialis, Dejean, Spec., v, 1831, p. 452 (*nec Wied.*).
var. *illustris*, Mannerheim, Bull. Mosc., xxxiii (i), 1850, p. 89.
„ *oxygonus*, Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 117 ; Rev. Mag. Zool., (2s.) xxiii, 1872, p. 244 : Saund., Trans. Ent. S. Lond., 1863, p. 468.
Hab. Malacca, Java, Borneo, Amboina., Ternate, Macassar.

brachypterus, Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 119 ; Saund., Trans. Ent. S. Lond., 1863, p. 468.
Hab. Borneo, Sarawak, Singapur.

cingalensis, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 203.
Hab. Ceylon, Kandy, Balangoda.

cupreicollis, Waterhouse, Trans. Ent. S. Lond., 1877, p. 1.
Hab. Andaman Islands.

cupripennis *(Pericalus)*, Thomson, Arch. Ent. i, 1857, p. 282 : Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 122.
Hab Singapur, Borneo, Sarawak.

cyanellus, Chaudoir, Bull. Mosc., xxi (i), 1848, p. 113.
Hab. Nepál.

cyanipennis, Chaudoir, *l.c.*, xxvii (i), 1854, p. 130.
Hab. N. India.

elegans, Fabr., Syst. Eleuth., i, 1801, p. 184 : Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 354 ; Berlin. Ent. Zeits., v, 1861, p. 120 : Lap. de Casteln., Hist. Nat. Ins. Col., i, p. 54, t. 4, f. 2.
amoenus, Chaudoir, Berlin Ent. Zeits., v, 1861, p. 120 : Rev. Mag. Zool. (2s) xxiii, 1872, p. 247, 250 : Saund., Trans. Ent. S. Lond., 1863, p. 468.
var. *australasiae*, Hope, Ann. Mag. N. H., ix, 1842, p. 426.
,, *celebensis*, Thoms., Arch. Ent., i, 1857, p. 282.
? elegans, Schmidt Goebel, Faun. Col. Birm. p. 83, *nec* Weber.
? lateralis, Brullé, Hist. Nat. Ins., iv, 1837, p. 233.
nitidulus, Lap. de Casteln., Et. Ent., 1834, p. 60.
var. *cyaneus*, Chaudoir, Rev. Mag. Zool., 1872, p. 247.
Hab. Java, Sumatra, Philippines, Ambina, Aru, Dorey, Batchian, Ceram, Celebes, Australia, Cape York, New Guinea.

elevatus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 84.
Hab, Burma, Martaban.

excisus, Motschulsky, Bull. Mosc., xxxvii (4), 1864, p. 303.
Hab. India.

facialis, Wiedemann, Zool. Mag., i (3), 1819, p. 165 : Dejean, Spec., i, p. 329 ; Ic., ii, p. 116, t. 7, f. 8 : Brullé, Hist. Nat. Ins. Col., i, p. 232 : Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 352 ; *id.*, Berlin Ent. Zeits., v, 1861, p. 116 : Saund., Trans. Ent. S. Lond., 1863, p. 468 : Bates, Ann. Mus. Civ. Gen., (2s.) viii, 1889, p. 12.
Hardwickei, Kirby, Trans. Linn. S. Lond., xvi, p. 98, t. 3, f. 1.
Hab. Bengal, Burma, Bhamo, Malacca, Ternate, Batchian, Ceram [*Ind Mus.*, Sibságar, Assam].

fuscoaeneus, Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 247, 249.
aeneus, Motsch., Bull. Mosc., xxxvii (4), 1864, p. 303 (*nec* Saund.)
Hab. Penang, Malacca.

Goebelii, Gemm. & Har., Mun. Cat., 1868, p. 153 : Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 245.
facialis, Schmidt Goebel, Faun. Col. Birm., p. 81 (*nec* Wied) : Chaud., Bull. Mosc., xxiii (2), 1850, p, 352.
? var. *basalis*, Chaudoir, Rev. Mag., *l.c.*, p. 245.
Hab. Burma, Malacca.

gracilis, Oberthür, Notes Leyden Mus., v. 1883, p. 220.
Hab. Sumatra, Serdang ; Philippines, Mindanao.

punctipennis, Saunders, Trans. Ent. S. Lond., 1863, p. 464, t. 18, f. 4 *a-b*.
Hab. Singapur.

reductus, Walker, Ann. Mag. N. H., (2s.) ii, 1858, p. 203 : ? *nec* Chaudoir, Berlin Ent. Zeits., v, 1861, p. 117 ; Rev. Mag. Zool., (2s.) xxiii, 1872, p. 245 : Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 210.
Hab. India, Ceylon, Malacca.

regalis, Schmidt Goebel, Faun. Col. Birm., 1846, p. 84.
Hab. Burma.

? rufipes, Gory, Ann. Soc. Ent. Fr., 1833, p. 204 : Chaud., Rev. Mag. Zool., (2s.) xxiii, 1872, p. 269.
Subquadratus, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 302.
Hab? India (*nec* Senegal).

Schaumii, Saunders, Trans. Ent. S. Lond., 1863, p. 457, t. 17, f. 3 *a-b*.
Hab. Borneo, Sarawak.

simplex, Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 246.
Hab. Philippines, Mindanao.

smaragdulus, Dejean, Spec., i, 1825, p. 331 : Lap. de Casteln., Hist. Nat. Ins., i, p. 54 : Chaudoir, Berlin Ent. Zeits, v, 1861, p. 119.
? pauper, Schmidt Goebel, Faun. Col. Birm., 1846, p. 84.
Hab. Java, Burma [*Ind. Mus.*, Andaman Islands].

splendidus, Saunders, Trans. Ent. S. Lond., 1863, p. 459, t. 17, f. 1*a-b*.
costulatus, Chaudoir, Rev. Mag. Zool. 1863, p. 489 ; *ib.*, 1872, p. 249.
Hab. Borneo, Sarawak.

versicolor, Saunders, *l. c. supra*, p. 463, t. 18, f. 1*a-b*.
Hab. Sumatra.

violaceus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 82.
Hab. Burma, Maulmain.

virens, Chaudoir, Rev Mag. Zool., (2s.) xxiii, 1872, p. 245.
Hab. Celebes, ? India.

Vollenhovenii, Chaudoir, *l.c.*, p. 248.
Hab. Sumatra.

Whithillii, Hope, Col. Man., ii, 1838, p. 164, t. 3, f. 2.
Hab. India [*Ind Mus.*, Sikkim, Assam, Calcutta, Burma].

Genus **PERICALUS**.

MacLeay, Annul. Javan., 1825, p. 15 : Schmidt Goebel, Faun. Col. Birm., p. 85 : Lacord., Gen. Col., i, p. 174 : Mun. Cat., p. 154 : Chaudoir, Bull. Mosc., xxi (i), 1848, p. 111 ; Berlin. Ent. Zeits., 1861, p. 123 ; *id.*, Ann. Soc. Ent. Belg., xii, 1868, p. 158 : Schaum, Berlin. Ent. Zeits., iv, 1860, p. 189 : Bates, Ent. Mon. Mag., vi, 1869, p. 69.
Coeloprosopus, Chaudoir, Bull. Mosc., xv (i), 1842, p. 839.
Pericallus, Chaudoir, *auct.*

cicindeloides, MacLeay, Annul. Javan., 1825, p. 15, t. 1, f. 2 : Gray Griffith's Anim. Kingd., Ins., i, 1832, t. 15, f. 2 : Brullé, Hist. Nat. Ins., Col., i, p. 230 : Lap. de Casteln., Hist. Nat. Ins., i, p. 57.
Hab. Java.

guttatus, Chevrolat, Mag. Zool., 1832, cl, ix, t. 46 : Brullé, Hist. Nat. Ins., Col., i, p. 231 : Lap. de Casteln., Hist, Nat. Ins., i, p. 57.
Hab. Java.

laetus, Schaum, Berlin. Ent. Zeits, iv, 1860, p. 190.
Hab. Borneo.

longicollis, Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 159.
Hab. Malacca.

ornatus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 86.
Hab. Burma.

quadrimaculatus (*Catascopus*), MacLeay, Annul. Javan., 1825, p. 15 : Lap. de Casteln., Hist. Nat. Ins., i, p. 55, t. 4., f. 3 : (*Coeloprosopus*) Chaudoir, Bull. Mosc., xv (i), 1842, p. 839.
quadrisignatus, Lap. de Casteln., Ann. Soc. Ent. Fr., 1832, p. 392.
Hab. Java.

tetrastigma, Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 123.
Hab. Singapur, Sarawak.

undatus, Chaudoir, Bull. Mosc., xxi (i), 1848, p. 111.
Hab. Philippines.

xanthopus, Schaum, Berlin. Ent. Zeits., iv, 1860, p. 191.
Hab. Borneo.

Genus **CALLEIDA**.

Dejean, Spec., i, 1825, p. 220 : Lacord., Gen. Col., i, p. 105 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xv, 1872, p. 103 : Mun. Cat., p. 114 : Schmidt Goebel, Faun. Col. Birm., p. 32 ; Bates, Biol. Centr. Amer., Col i (i), p. 203.
Callida, Chaudoir, *l.c. supra*.
Trigonothops, W. MacLeay, Trans. Ent. S. N. S. W., i, 1864.

chloroptera, Dejean, Spec., v, 1831, p. 340 : Schmidt Goebel, Faun. Col. Birm., p. 33 : Chaud., *Mon.*, p. 112.
Hab. India, Java.

cupreo-micans, Oberthür, Notes Leyden Mus., v, 1883, p. 218.
Hab. E. Sumatra, Serdang.

femoralis, Chaudoir, *Mon.*, p. 112.
Hab. Dekhan.

lativittis, Chaudoir, *Mon.*, p. 113.
Hab. Dekhan.

lepida, Redtenb., Reise Novara, Zool. ii, Col., 1867, p. 6, t. 1, f. 2 : Chaudoir, *Mon.*, p. 112.
Hab. Hongkong, Japan.

? onypterygoides, Chaudoir, *Mon.*, p. 123.
Hab. ? Dekhan, ? Colombia.

propinqua, Fleutiaux, Ann. Soc. Ent. Fr., (6s.) vii, 1887, p. 59.
Hab. Annam, Hué.

splendidula (*Carabus*), Fabr., Syst. Eleuth., i, 1801, p. 184: Dejean (*Calleida*), Spec. v, p. 341 : ? (*Lebia*) MacLeay, Annul. Javan., p. 26 : Schmidt Goebel, Faun. Col. Birm., p. 32 : Chaud., *Mon.*, p. 113.
rubricata (*Calleida*), Motsch., Bull. Mosc., xxxvii (2), 1864, p. 238.
Hab. Bengal, Java, Hongkong, Shanghai.

? terminata, Waterhouse, Trans. Ent. S. Lond., 1876, p. 11.
Hab. Borneo, Sarawak.

Genus **PLOCHIONUS**.

Dejean, Spec., i, 1825, p. 250 : Hope, Col. Man., ii, t. 1, f. 6 : Schmidt Goebel, Faun. Col. Birm., p. 42 : Lacord., Gen. Col., i, p. 135 : Mun. Cat., p. 147 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xv, 1872, p. 168 : Bates, Biol. Centr. Amer., Col., i (i), p. 197.

brunneus (*Lebia*), Wiedemann, Zool. Mag., ii (i), 1823, p. 59 : *gen. dub.* ? *Lebia*.
Hab. India, Bengal.

fenestratus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 42 : *gen. dub.*
Hab. Burma.

pallens (*Carabus*), Fabricius, Syst. Ent., 1775, p. 244 : Chaudoir, *Mon.*, p. 76 : Bates, Biol. Centr. Amer., Col., i (i), p. 198.
Boisduvalii, Gory, Ann. Soc. Ent. Fr., 1833, p. 189.
Bonfilsii, Dejean, Spec., i, p. 251 : Hope, Col. Man., ii, t. 1. f. 6 : Brullé, Hist. Nat. Ins. Col., i, p. 224, t. 7, f. 6 : Lap. de Casteln., Hist. Nat. An. Art., i, p. 41.
Hab. N. and S. America, Europe, Africa, Asia, Java, Formosa, Oceania.

Genus **CROSSOGLOSSA**.

Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xv, 1872, p. 177.

latecincta, Bates, Trans. Ent. S. Lond., 1873, p. 315.
Hab. Hongkong, Japan.

nigrolineata (*Plochionus*), Chaudoir, Bull. Mosc., xxv (i), 1852, p. 44 ; Mon., p. 180.
Hab. Bengal.

testacea, Chaudoir, *Mon.*, p. 178.
Hab. Dekhan.

Genus **BOTHYNOPTERA**.

Schaum, Jl. Ent, ii (1863), 1866, p. 75 : Mun. Cat., p. 143 : Chaudoir, Ann. Soc. Ent. Belg., xv, 1872, p. 181.

dorsigera, Schaum, *l.c. supra*, p. 76, t. 4. f. 3 : Chaudoir, *l.c. supra*, p. 181.
Hab. N. India.

Genus **ENDYNOMENA**.

Chaudoir, Ann. Soc. Ent. Belg., xv, 1872, p. 186.

? Pradierii, Fairmaire, Rev. Mag. Zool., 1849, p. 34 : Chaudoir, *l.c. supra*, p. 186.
Hab. Marquesas Islands, ? Pondicherry.

Genus **ANCHISTA**.

Nietner, Jl. As. Soc. Ben., xxvi 1856, p. 523 ; *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 374 : Mun. Cat., p. 118 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 236.
Paraphaea, Bates, Trans. Ent. S. Lond., 1873, p. 312.

binotata (*Plochionus*), Dejean, Spec., i, 1825, p. 252 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 111.
discophora, (*Callida*), Chaudoir, Bull. Mosc,, xxv (i), 1852, p. 48.
signifera (*Paraphaea*), Bates, Trans. Ent. S. Lond., 1873, p. 312.
Hab. N. India, Andamans, Mariannes, Japan.

eurydesa, Chaudoir, Bull. Mosc., lii (2), 1877, p. 236.
Hab. India.

glabra, Chaudoir, *l.c.*, p. 237.
Hab. India, Pondicherry.

modesta, Nietner, Journ. As Soc. Ben., xxv, 1856, p. 523 : Ann. Mag. N. H., (2s.) xix, 1857, p. 375 : Chaudoir, *l.c. supra*, p. 239.
Hab. Ceylon, Colombo.

picea, Chaudoir, Bull. Mosc., lii (2), 1877, p. 238.
Hab. Dekhan.

subpubescens, Chaudoir, *l.c.*, p. 238.
Hab. N. India.

Genus **CYMINDIS**.

Latreille, Gen. Crust., i, 1806, p. 190 : Lacord., Gen. Col., i, p. 108 : Mun. Cat., p. 118 : Schmidt Goebel, Faun. Col. Birm., p. 31 : *Monograph*, Chaudoir, Berlin. Ent. Zeits., xvii, 1873, p. 53.
Anomoeus, Fischer, Ent. Imp. Russ., i, 1821, p. 125.
Arrhostus, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 240, *tab.*
Berus, Motsch., *l.c.*, p. 240.
Cymindoidea, Lap. de Casteln., Ann. Soc. Ent. Fr., i, 1832, p. 390 : Chaud., Bull. Mosc., xxix (3), 1875, p. 9.
Malisus, Motsch. *l.c. supra*, p. 240.
Mastus, Motsch., *l.c. supra*, p. 240.
Menas, Motsch., *l.c.*, p. 240.
Philotecnus, Mannerheim, Brachyél., ii, 1837, p, 42 : Mun. Cat., p. 123.
Psammastus, Motsch., *l.c. supra*, p. 240, 299, *tab. syn.*
Tarsostinus, Motsch., *l.c.* p. 240.
Tarus, Clairville, Ent. Helv., i, 1806, p. 94 : Motsch., *l.c. supra*, p. 240, 302.

***attenuata**, Jakowleff, Hor. Soc. Ent. Ross., xxi, 1887, p. 150.
Hab. Pámir, Gilgit.

distigma (*Cymindoidea*), Chaudoir, Bull. Mosc. xlix (3), 1875, p. 15.
Hab. Bengal.

glabrella, Bates, Proc. Zool. S. Lond., 1878, p. 719.
Hab. India, Ladák [*Ind. Mus.*, type].

indica, Schmidt Goebel, Faun. Col. Birm., 1846, p. 31 : Chaudoir, Bull. Mosc., xlix (3), 1875, p. 16.
Guérinii, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 49.
Hab. Burma, N. India, Nilgiris.

* **Mannerheimii** Gebler, Bull. Ac. St. Petersb., i, 1842, p. 36 : Bull. Mosc., 1859, p. 317.
Hab. Siberia [*Ind. Mus.*, Yarkand Mission, Bates].

nigra (*Cymindoidea*), Chaudoir, Bull. Mosc., xlix (3), 1875, p. 19.
Hab. Coromandel.

quadrimaculata, Redtenbacher, Hügel Kaschm., iv (2), 1844, p. 499, t. 23, f. 3.
Hab. India.

? **stigmula** (*Cymindis*), Chaudoir, Bull. Mosc., xxv (i), 1852, p. 57 : *ib.*, xlix (3), 1875, p. 61.
Hab. N. India, Simla.

Genus **TARIDIUS**.

Chaudoir, Bull. Mosc., xlix (3), 1875, p. 7.

opaculus, Chaudoir, *l.c.*, p. 8.
Hab. N. India.

Genus **PLATYTARUS**.

Fairmaire, Bull. Soc. Ent. Fr., (2s.) viii, 1850, p. xvii : Mun. Cat., p. 123.

Boysii (*Cymindis*), Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 50.
Hab. N. India, Simla.

Genus **CELAENEPHES**.

Schmidt Goebel, Faun. Col. Birm., 1846, p. 77 : Lacord., Gen. Col., i, p. 138 : Mun. Cat., p. 148.

parallelus, Schmidt Goebel, *l.c.*, *supra*, p. 78, t. 2, f. 5.
linearis (*Leistus*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 203.
Hab. Burma, Ceylon, Malacca, Perak, Siam, Sumatra, New Caledonia.

Genus **PENTAGONICA**.

Schmidt Goebel, Faun. Col. Birm., 1846, p. 48 : Lacord., Gen. Col., i, p. 133 : Schaum, Berlin. Ent. Zeits, vii, 1863, p. 74 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 212 : Bates, Trans. Ent. S. Lond., 1873, p. 321.

Didetus, Leconte, Trans. Amer. Phil. Soc., 1853, p. 377.
Elliotia, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 524 ; *id.*, Ann. Mag. N. H., (2s) xix, 1857, p. 375.
Rhombodera, Reiche, Rev. Zool., 1842, p. 313 : Lacord., Gen. Col., i, p. 139 : Mun. Cat., p. 148 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 74 (*nom. praeoc.*).
Trichothoraæ, Montrouzier, Ann. Soc. Ent. Fr., 1860, p. 235.
Wakefieldia, Broun, Man. New Zeal. Col., 1880, p. 62.
Xenothoraæ, Wollaston, Col. Hesper., 1867, p. 15.

Erichsonii, Schmidt Goebel, Faun. Col. Birm., 1846, p. 48.
Hab. Burma.

marginata, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 105, t. 9, f. 3.
Hab. Ceylon.

pallipes *(Elliotia)*, Nietner, Jl. As. Soc. Ben., 1856, p. 525 ; Ann. Mag. N. H., (2s.) xix, 1857, p. 376.
? = *Erichsonii*, Schmidt Goebel, *q.v.*
Hab. Ceylon.

ruficollis, Schmidt Goebel, Faun. Col. Birm., 1846, p. 48.
Hab. Burma, N. India.

suturalis *(Rhombodera)*, Schaum, Berlin. Ent. Zeits., vii, 1863, p. 75.
Hab. Hongkong.

transparipes, Motsch ulsky, Et. Ent., 1859, p. 29.
Hab. Ceylon, Kandy *(Bates)*.

HELLUONINI:—Lacordaire, Gen. Col., i, p. 90 : Horn, Gen. Carab., p. 160 : Leconte & Horn, Class. Col., p. 45.

Genus **CREAGRIS**.

Nietner, Jl. As. Soc. Beng., xxvi, 1857, p. 139 ; Ann. Mag. N. H., (2s.) xx, 1857, p. 277 : Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p, 262 : Gestro, Ann. Mus. Civ. Gen., vii, p. 868.

Pseudohelluo, Lap. de Casteln., Nat. Austr. Col., 1867, p. 18.

affinis, R. Gestro, Ann. Mus. Civ. Gen., vii, 1875, p. 870, fig.
Hab. Siam, Bangkok.

labrosus, Nietner, Jl. As. Soc. Beng., xxvi, 1857, p. 139 ; Ann. Mag. N. H., (2s.) xx, 1857, p. 278 : Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 213 : R. Gestro, *l.c. supra*, p. 872, fig.
piceus, Schaum, Berlin. Ent. Zeits., 1863, p. 80 : *id.*, *l.c.*, 1864, p. 116, t. 2, f. 6.
Hab. Ceylon, Colombo (*Bates*).

Genus **MACROCHILUS**.

Hope, Col. Man., ii, 1838, p. 116 : Schmidt Goebel, Faun. Col. Birm., p. 64 : Lacord., Gen. Col., i, p. 93 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 80 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 247.

Acanthogenius, Reiche, Ann. Soc. Ent. Fr., xi, 1842, p. 3 : Lacord., Gen. Col., i, p. 93.
Macrocheilus, (Kirby), Hope, *l.c. supra*.
Meladroma, Motsch., Et. Ent., 1855, p. 54 : Chaud., Rev. Mag. Zool., (2s.) xxiii, 1872, p. 171.

anthioides, Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 169.
Hab. Bengal.

asteriscus, White, Ann. Mag. N. H., xiv, 1844, p. 422 : Chaudoir, Rev. Mag. Zool., 1872, p. 172.
crucifer, Redten bacher, Reise Novara, Zool. ii, Col., 1867, p. 4, t. 2, f. 3.
Hab. China, Hongkong [*Ind. Mus.*, Hongkong].

Bensonii, Hope, Col. Man., ii, 1838, p. 166, t. 1, f. 5 : Chaudoir, Rev. Mag. *l.c. supra*, p. 212.
quadrimaculatus, Guérin, Rev. Zool., 1840, p. 38 : Rev. Mag. Zool., Ins. t. 47.
Hab. N. India, Madras, Ceylon, [*Ind. Mus.*, Madras, Giridhi, Sibságar, Darjiling, Rurki].

distactus, Wiedemann, Zool. Mag., ii (i), 1823, p. 49.
Hab. Java.

dorsalis, Klug, Jahrb. Insect., 1834, p. 77.
Hab. India.

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Hab. Java.

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Hab. India.

trimaculatus, Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 171.
Hab. Dekhan.

tripustulatus, Fabr., Ent. Syst., i, 1792, p. 145 : Dejean, Spec., i, p. 286 : Guérin, Voy. Delessert, ii, p. 34 : Schmidt Goebel, Faun. Col. Birm., p. 65, pt. : (*Helluo*) Lap. de Casteln., Hist. Nat. Ins., i, p. 47 : Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 212.
Hab. Java, Burma [*Ind. Mus.*, Rangoon].

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bimaculatus, MacLeay, *l.c. supra*, p. 29, t. 1. f. 8 : Chaudoir, Rev. Mag. Zool., 1872, p. 139 : Bates, Trans. Ent. S. Lond., 1873, p. 304.
Hab. Java, China, Japan.

elegans, Nietner, Journ. As. Soc. Beng., xxvi, 1857, p. 143 ; *id.*, Ann. Mag. N. H., (2s.) xx, 1857, p. 281.
Hab. Ceylon.

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Hab. Malacca.

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bimaculatus, Nietner (*nec* MacLeay), Jl. As. Soc. Ben., xxvi, 1857, p. 144 ; Ann. Mag. N. H., (2s.) xx, p. 282.
Hab. Ceylon.

ruficollis, Nietner, Jl. As. Soc. Ben. *l.c. supra*, p. 144 ; Ann. Mag., *l.c. supra*, p. 282.
Hab. Ceylon.

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Hab. E. Sumatra, Serdang.

simplex, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 199.
Hab. Ceylon, Peradeniya.

Genus **OMPHRA**.

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atrata, Klug, Jahrb. Insect., 1834, p. 72.
Hab. India.

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Hab. India, Simla.

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Hab. India [*Ind. Mus.*, Bengal, Giridhi, Vizagapatam. S. India].

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Hab. India, Ceylon.

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Hab. India.

rufipes, Klug, Jahrb. Ins., i, 1834, p. 72 : Chaudoir, *l.c. supra*, p. 141 : Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 71.
Hab. India, Ceylon, Colombo.

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Hab. Tranquebar.

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Hab. India [*Ind. Mus.*, Vizagapatam, W. Bengal].

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Hab. Bombay [*Ind. Mus.* N. India].

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Hab. India, Pondicherry [*Ind. Mus.*, Berhampur].

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taprobanae, Westwood, Trans. Ent. S. Lond., iv, 1847, p. 279, t. 21, f. B.
ceylonicus, Lacordaire, Gen. Col., Atlas, t. 7, f. 1, (*nec Parry*).
Hab. Ceylon, Kitugalle (*Bates*).

Westwoodii, Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 203.
Hab. Dekhan.

Genus **PHYSOCROTAPHUS**.

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ceylonicus, Parry, Trans. Ent. S. Lond., v, 1849, p. 180, t. 18, f. 4.
Hab. Ceylon, Dikoya (*Bates*).

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Hab. Cambodia.

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Hab. Sumatra.

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Hab. Java.

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corpulentus, Chaudoir, Ann. Soc. Ent. Belg., xv, 1872, p. 20.
Hab. Penang.

crassicornis, Chaudoir, Bull. Mosc., xxvi (i), 1852, p. 78; *id.*, *Mon.*, p. 19.
Hab. Timor, Moluccas, Philippines.

Orthogonini, Chaudoir, *Essai Mon.*, Ann. Soc. Ent. Belg., xiv, 1871, p. 95 : Horn, Gen. Carab., p. 164.

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brunnilabris, MacLeay, Annul. Javan., 1825, p. 27.
Hab. Java.

acutangulus, Chaudoir, Bull. Mosc., liii (2), 1878, p. 5.
Hab. Ceylon.

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Hab. Java.

angulatus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 58 : Chaudoir, Mon., p. 110.
Hab. Burma, Tenasserim.

angusticollis, Schmidt Goebel, *l.c.*, p. 61 : Chaudoir, Mon., p. 122.
Hab. Burma.

? angustus, Chaudoir, *Mon.*, p. 114.
Hab. ? Lake Ngami, ? Malaya.

Baconii, Chaudoir, *Mon.*, p. 109.
Hab. Bengal.

crassicrus, Chaudoir, *Mon.*, p. 105.
Hab. Java.

crenaticrus, Chaudoir, *Mon.*, p. 113.
Hab. Cambodia.

Davidii, Chaudoir, Bull. Mosc., liii (2), 1878, p. 3.
Hab. Middle China.

deletus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 56 : Chaud., *Mon.*, p. 113.
Hab. Burma.

duplicatus *(Carabus)*, Wiedemann, Zool. Mag., i (3), 1819, p. 166 : Schmidt Goebel, Faun. Col. Birm., p. 60 : Lap. de Casteln., Hist. Nat. An. Art., i, p. 46 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 110.
Hab. Burma, Thagata, Tenasserim, S. China.

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Hab. India, Nilgiris.

femoratus, Dejean, Spec., i, 1825, p. 281 : Chaud., *Mon.*, p. 122.
picilabris, MacLeay, Annul. Javan., 1825, p. 27.
Hab. Java, Penang, Malacca.

fugax, Chaudoir, *Mon.*, p. 108.
Hab. Ceylon.

Hagenii, Oberthür, Notes Leyden Mus., v, 1883, p. 222.
Hab. E. Sumatra, Serdang.

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Hab. Penang.

Hopei, Gray, Griffith Anim. Kingd., Ins., ii, 1832, p. 273, t. 13, f. 4 : Lap. de Casteln., Hist. Nat. An. Art., i, p. 46 : Chaud., Mon., p. 103.
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Hab. India, Malabar, Malacca [*Ind. Mus.*, Khasiya Hills, Sibságar, Assam].

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Hab. Philippines, ? Java.

intermedius, Chaudoir, *Mon.*, p. 102.
Hab. Java.

insularis, Chaudoir, *Mon.*, p. 106.
Hab. Penang.

longicornis, Chaudoir, *Mon.*, p. 109.
Hab. Siam.

luzonicus, Chaudoir, *Mon.*, p. 123.
Hab. Philippines.

melanarius, Chaudoir, *Mon.*, p. 113.
Hab. Penang.

Mellyi *(Haplopisthius)*, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 434 ; *Mon.*, p. 101.
Hab. N. India, Bengal.

Mniszechii, Chaudoir, *Mon.*, p. 101.
Hab. Malacca.

Mouhotii, Chaudoir, *Mon.*, p. 107.
Hab. Cochin China.

opacus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 60.
Hab. Burma.

parallelus, Chaudoir, *Mon.*, p. 109.
Hab. Ceylon.

parvus, Chaudoir, *Mon.*, p. 112.
Hab. Nilgiris.

? **philippensis** (*Amblygnathus*), Chevrolat, Rev. Zool., 1841, p. 221.
Hab. Philippines.

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Hab. Malacca.

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Hab. Cambodia.

planiger (*Maraga*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 204 : Bates, *l.c.*, (5s.), xvii, 1886, p. 211 : Chaud., Ann. Soc. Ent. Belg., xiv, 1871, p. 121.
Hab. Ceylon.

plicatus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 59 : Chaud., *Mon.*, p. 110.
Hab. Burma, Tennasserim.

politus, Chaudoir, *Mon.*, p. 105.
Hab. Malacca.

profundestriatus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 58 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 110.
Hab. Burma, Teintso.

puncticollis, Schmidt Goebel, Faun. Col. Birm., 1846, p. 57 : Chaudoir, *Mon.*, p. 112.
duplicatus, Dejean, Spec., i, 1825, p. 279 (*nec* Wied.) : ? MacLeay, Annul. Javan., p. 27.
Hab. India, Burma, Tenasserim.

punctulatus, Chaudoir, *Mon.*, p. 110.
Hab. India.

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Hab. Ceylon.

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duplicata (*Apsectra*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 61 : (*nec* Wied.).
Hab. Burma.

sulcatus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 59 : Chaudoir, *Mon.*, p. 110.
Hab. Burma, Tenasserim.

suturalis, Chaudoir, *Mon.*, p. 104.
Hab. Penang.

xanthomerus, Redtenbacher, Reise Novara, Zool, ii, Col., 1867, p. 12 : Chaud., *Mon.*, p. 124.
Hab. Hongkong.

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Hab. Malacca.

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Hab. Coromandel, Penang.

Genus ACTENONCUS.

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ater, Lap. de Casteln., Et. Ent., 1834, p. 48 : Chaudoir, Bull. Mosc., liii (2), 1878, p. 7.
atratus, Chaudoir, Ann. Soc. Ent. Belg., xiv, 1871, p. 126.
Hab. Java.

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agnatus, Chaudoir, *Mon.*, p. 43.
Hab. Chusan, ? Hongkong.

amoenus, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 70 : *Mon.*, p. 36.
Hab. India.

annulus, Fabr., Syst. Eleuth., i, 1801, p. 217 : Chaud., *Mon.*, p. 47.
Hab. India, Tranquebar.

aptinoides, Chaudoir, *Mon.*, p. 19.
Hab. India.

assamensis, Chaudoir, *Mon.*, p. 33.
Hab. Assam.

assimilis, Chaudoir, *Mon.*, p. 38.
Hab. North China, ? Yangtse Valley.

bimaculatus, Linn., Mantis., 1771, p. 532 : ? Fabr., Syst. Ent., i, p. 243 ; Oliv., Ent., iii 35, p. 65, t. 2, f. 16 *a—c* : Dejean, Spec., i, p. 299 : Lap. de Casteln., Hist. Nat. An. Art. Ins., i, p. 51 ; Chaudoir, *Mon.*, p. 34.
Hab. N. India, Ceylon, Kitugalle (*Bates*) [*Ind. Mus.*, Calcutta, Afghanistan].

Catoirei (*Brachinus*), Dejean, Spec. i, 1825, p. 301 : Lap. de Casteln., Hist. Nat. An. Art., i, p. 51 : Chaudoir, *Mon.*, p. 24.
var. *lineifrons*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 80.
Hab. Bengal, Simla, Assam, Ceylon, Kandy (*Bates*).

consularis (*Brachinus*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 75.
Hab. Burma.

discicollis (*Brachinus*), Dejean, Spec., i, 1825, p. 300 : Chaudoir, *Mon.*, p. 21.
var. *affinis* (*Brachinus*), Dejean, Spec., i, 1825, p. 301.
Hab. India, Dekhan.

emarginatus, Chaudoir, *Mon.*, p. 20.
? = *Girionierii*, Eyd. & Soul., *q.v.*
Hab. Philippines.

fumigatus (*Brachinus*), Dejean, Spec., i, 1825, p. 307 : Chaudoir, *Mon.*, p. 40.
Hab. Philippines.

fuscicollis (*Brachinus*), Dejean, Spec., i, 1825, p. 306 : Chaudoir, *Mon.*, p. 37.
var. *ambiguus*, Dejean, Spec., i, 1825, p. 304 : Chaudoir, *Mon.*, p. 37.
,, *interruptus*, Dejean, *l. c.* p. 306 : Schmidt Goebel, Faun. Col. Birm., p. 74 : Chaudoir, *Mon.*, p. 37.
,, *quadripustulatus*, Chaudoir, Bull. Mosc., xvi (3), 1843, p. 706 ; *Mon.*, p. 37.
Hab. Borneo, Sumatra, Java, Ceylon, Kitugalle (*Bates*).

Girionierii, Eydoux & Souleyet, Rev. Zool., 1839, p. 264 : Desmarest, Voy. La Bonite, i, 1841, p. 293, t. 2, f. 2 : Chaudoir, *Mon.*, p. 32.
Hab. Philippines, Mindanao, Luzon.

hilaris, Fabr. Ent. Syst. Suppl., 1798, p. 56 ; Chaudoir, *Mon.*, p. 25.
var. *sobrinus*, Dejean, Spec., ii, 1826, p. 462.
Hab. Dekhan, Coromandel, Burma.

javanus (*Brachinus*), Dejean, Spec., i, 1825, p. 305 : Chaudoir, *Mon.*, p. 42.
occipitalis (*Aptinus*), MacLeay, Annul. Javan., 1825, p. 28.
var. *fimbriatus* (Dejean), Chaudoir, *Mon.*, p. 42.
Hab. Java.

jessoensis, Morawitz, Bull. Acad. St. Petersb., v. 1862, p. 322 : Beitr. Käf. Faun. Jesso, p. 22, t. 1, f. 9 : Chaudoir, *Mon.*, p. 35.
Hab. Manchuria, Japan, ? Hongkong.

lissoderus, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 79 : *id.*, *Mon.*, p. 24.
Hab. Tibet.

marginalis, Dejean, Spec., i, 1825, p. 310 : Schmidt Goebel, Faun. Col. Birm., p. 74 : Chaudoir, *Mon.*, p. 34.
Hab. India, Burma, Siam, Cochinchina, Cambodia [*Ind. Mus.*, Calcutta, Sikkim, Sibságar, Assam].

marginicollis, Motschulsky, Et. Ent., 1853, p. 44 : Chaudoir, *Mon.*, p. 43.
Hab. N. China, ? Shanghai.

melancholicus (*Brachinus*), Schmidt Goebel, Faun. Col. Birm., 1846. p. 71 : Chaudoir, *Mon.*, p. 20.
Hab. India, Bengal.

nebulosus, Chaudoir, *Mon.*, p. 27.
Hab. Cochinchina.

picicollis, Chaudoir, *Mon.*, p. 44.
Hab. Burma, Rangoon.

siamensis, Chaudoir, *Mon.*, p. 29.
Hab. Siam.

stenoderus, Chaudoir, Bull. Mosc. xxiii (i), 1850, p. 77 ; *Mon.*, p. 41.
=? *consularis*, Schmidt Goebel, *q.v.*
Hab. N. India, Bengal, Dekhan, Java.

subcordatus, Chaudoir, *Mon.*, p. 38.
Hab.——?

Genus **BRACHYNUS**.

Weber, Obs. Ent., 1801, p. 22 : Lacord., Gen. Col., i, p. 99 : Motsch., Bull. Mosc., xxxvii (3), 1864, p. 214, *tab. syn.*: Mun. Cat., p. 103 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xix, 1876, p. 49.
Aploa, Hope, Trans. Zool. S. Lond., 1833, p. 91.

atripennis, Chaudoir, *Mon.*, p. 71.
Hab. India, Simla.

bigutticeps, Chaudoir, *Mon.*, p. 52.
Hab. ? India, ? Sunda Islands.

caligatus, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 109.
Hab. Burma, Bhamo.

chinensis, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 81 ; *Mon.*, p. 68.
Confucius, Bohem., Freg. Eug. Resa, Col., 1858, p. 3.
Hab. Hongkong.

cinctellus, Chaudoir, *Mon.*, p. 55.
Hab. India, Dekhan.

flaviventris, Chaudoir, *Mon.*, p. 68.
Hab. India, Coromandel.

Hägenii, Oberthür, Notes Leyden Mus., v, 1883, p. 217.
Hab. E. Sumatra, Serdang.

hexagrammus, Chaudoir, *Mon.*, p. 55.
Hab. Bengal.

illotus, Chaudoir, *Mon.*, p. 58.
Hab. Dekhan.

limbellus, Chaudoir, *Mon.*, p. 70.
Hab. Dekhan.

limbicollis, Chaudoir, *Mon.*, p. 67.
Hab. Dekhan.

longipalpis, Wiedemann, Germar, Mag. Ent., iv, 1821, p. 118 : Dejean, Spec. i, p. 314 : Chaudoir, *Mon.*, p. 87.
Hab. Bengal.

luzonicus, Chaudoir, *Mon.*, p. 68.
Hab. Philippines.

modestus, Schmidt Goebel, Faun, Col. Birm., 1846, p. 73 : Chaudoir, *Mon.*, p. 69.
Hab. Calcutta, Maulmain.

piceus, Chaudoir, *Mon.*, p. 53.
Hab. Philippines.

pictus (*Aploa*), Hope, Trans. Zool. S. Lond. i, 1833, p. 92 : Brullé, Hist. Nat. Ins., Col., i, 1834, p. 223 : Lap. de Casteln., Hist. Nat. An. Art. Ins., i, p. 53 : Chaudoir, *Mon.*, p. 54.
figuratus, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 41.
Hab. N. India, Bengal.

punctipollis, Schmidt Goebel, Faun. Col. Birm., 1846, p. 72 : Chaudoir, *Mon.*, p. 69.
Hab. Burma.

scitulus, Schmidt Goebel, *l. c.* p. 72 : ? Chaudoir, *Mon.*, p. 59.
Hab. Burma, ? Tranquebar.

scotomedes, Redtenb., Reise Novara, Zool. ii, Col., 1867, p. 5 : Chaudoir, *Mon.*, p. 53.
Hab. Hongkong, Shanghai.

scutellatus, Chaudoir, *Mon.*, p. 69.
Hab. Dekhan.

sexmaculatus, Dejean, Spec., i, 1825, p. 312 : Lap. de Casteln., Hist. Nat. An. Art., i, p. 51 : Chaudoir, *Mon.*, p. 63.
Hab. N. to S. India.

suturellus, Chaudoir, *Mon.*, p. 69.
Hab. N. India.

tetracolon, Chaudoir, *Mon.*, p. 61.
Hab. Dekhan.

tetragrammus, Chaudoir, *Mon.*, p. 54.
Hab. Bengal.

vigilans, Chaudoir, *Mon.*, p. 68.
Hab. N. India.

vitticollis, Chaudoir, *Mon.*, p. 56.
Hab. Burma, Rangoon.

Genus **STYPHLOMERUS.**

Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xix, 1876, p. 87.
Styphromerus, Chaudoir, *l. c.*, p. 88.

dichrous, Gemm. & Har., Mun. Cat., 1868, p. 105 : Chaudoir, *Mon.*, p. 92.
bicolor, Bohem., Freg. Eug. Resa, Col., 1858, p. 3 (*nec.* Brullé) : *nec* Bates, Trans. Ent. S. Lond., 1873, p. 307.
Hab. Hongkong.

fusciceps (*Brachinus*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 73 : Chaudoir, *Mon.*, p. 92.
Hab. Burma.

ruficeps, Chaudoir, *Mon.*, p. 91.
Hab. India, Coromandel.

Genus **CREPIDOGASTER.**

Boheman, Ins. Caffr., i. 1848, p. 68 : Mun. Cat., p. 109 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xix, 1876, p. 92.
Aptinus, pt. Dejean, Spec., i, 1825, p. 290.

Crepidostoma, Motsch., Et. Ent., 1862, p. 54.

humeratus, Chaudoir, *Mon.*, p. 96.
Hab. India, Malabar.

Genus **MASTAX**.

Fischer, Ent. Imp. Ross., iii, 1825, p. 111 ; Schmidt Goebel, Faun. Col. Birm., p. 68 : Lacord., Gen. Col., i, p. 101 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 82 : Mun. Cat., p. 108 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xix, 1876, p. 97.
Brachinus, Fabricius, Dejean, Steven.

elegantulus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 69, t. 2, f. 1 : Chaudoir, *Mon.*, p. 99.
Hab. Burma.

histrio, Fabricius, Syst Eleuth., i. 1801, p. 219 : Chaudoir, *Mon.*, p. 101.
Hab. India, Dekhan.

moestus, Schmidt Goebel, Faun. Col. Birm., 1846, p. 70, t. 2, f. 3 : Chaudoir, *Mon.*, p. 100.
Hab. Burma.

ornatus, Schmidt Goebel, *l. c.*, p. 70 : Chaudoir, *Mon.*, p. 100.
Hab. Burma.

poecilus, Schaum, Berlin. Ent. Zeits., vii, 1863, p. 82 : Chaudoir, *Mon.*, p. 101.
Hab. China, Hongkong, Singapur.

pulchellus, Dejean, Spec., v, 1831, p. 433 : Chaudoir, *Mon.*, p. 99.
Hab. India.

striaticeps, Chaudoir, *Mon.*, p. 99.
Hab. Dekhan.

APOTOMINI—Jacq. Duval, Gen., i, p. 43 ; Horn, Gen. Carab., p. 167.

Genus **APOTOMUS**.

Illiger, Mag. Ins., vi, 1807, p. 348 : Lacord., Gen. Col., i, p. 172 : Mun. Cat., p. 166.

atripennis, Motschulsky, Et. Ent., 1858, p. 22.
Hab. Ceylon.

fuscus, Motschulsky, *l. c.*, p. 22.
Hab. India.

xanthotelus, Bates, Ent. Mon. Mag., xi, 1874, p. 95 ; Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 100.
Hab. India, Burma, Bhamo.

BROSCINI, *(Cnemacanthini)*, Putzeys, Stettin. Ent. Zeits., xxix, 1868, p. 305 : Horn. Cat. Carab.

Genus **BROSCUS**.

Panzer, Index Ent., 1813, p. 62 : Lacord., Gen. Col., i, p. 239 : Mun. Cat., p. 243 : Putzeys, *Monograph*, Stettin. Ent. Zeit., 1868, p. 307.
Cephalotes, Bonelli, Mém. Acad. Turin, 1810 *(nom præoc.)*.
Pseudocupis, Voet, Cat. Col, 1770, *teste*, Gozis, Récherche, 1886, p. 6.

anomalus, Chaudoir, Bull. Mosc., liii (2), 1878, p. 1.
Hab. N. W. Himálaya.

nepalensis (*Percus*), Hope, Gray's Zool. Misc., 1831, p. 21.
Hab. Nepál.

nobilis (*Caphalotes*), Dejean, Spec., iii, 1828, p. 432.
rufipes, Guérin, Ic. Reg. An., t. 6, f. 5 : Gray, Griffith, An. Kingd., Ins., i, 1832, t. 25, f. 3.
Hab. ? India, Syria.

punctatus (*Caphalotes*), Dejean, Spec., iii, 1828, p. 431 : Chaudoir, Bull. Mosc., liii (2), 1878, p. 2.
limbatus, Ball., Bull. Mosc., xliii (2), 1870, p. 327.
Hab. Egypt, Syria, Arabia, Nepál.

Genus CRASPEDONOTUS.

Schaum, Berlin. Ent. Zeits., vii, 1863, p. 87 : Mun. Cat., p. 245 : Putzeys, Stettin. Ent. Zeit., 1868, p. 314.

tibialis, Schaum, *l.c. supra*, p. 87, t, 1, f. 5 : Putzeys, *l.c. supra*, p. 314 : Bates, Trans., Ent. S. Lond., 1873, p. 243.
Hab. Japan, China, Fuchau.

Genus BROSCOSOMA.

Putzeys, Car. Gen. Nov., 1846 ; *id.*, Stettin. Ent. Zeit., xxix, 1868, p. 353 : Lacord., Gen. Col., i, p. 242 : Mun. Cat., p. 244.

Ribbeii, Putzeys, Stettin. Ent. Zeit., xxxviii, 1877, p. 100.
Hab. Darjiling.

CHLAENINI:—Lacordaire, Gen. Col., i, 1854, p. 215 : Horn, Trans. Amer. Ent. S., x, p. vii : Gen. Carab., p. 171 : Leconte & Horn, Class. Col., p. 50.

Genus CHLAENIUS.

Bonelli, Obs. Ent., 1809, tab. syn. : Lacord., Gen. Col., i, p. 224 : Mun. Cat., p. 214 : Chaudoir, Bull. Mosc., xxix (3), 1856, p. 187 ; *id.*, *Monograph*, Ann. Mus. Civ. Gen., viii, 1876 : Laferté Sénectére, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 209. [Laferte's numerous undescribed species are omitted].

Acacus, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 254 : Lacord., Gen. Col., i, p. 222.
Aleptocerus, Laferté, *l.c. supra*, p. 236 : Lacord., Gen. Col., i, p. 218.
Amblygenius, Laferté, *l.c.*, p. 263 : Mun. Cat., p. 213.
Barymorphus, Laferté, *l. c.*, p. 235.
Callistoides, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 334.
Chlaenites, Motsch., Bull. Acad. St. Petersb., ii, 1860, p. 411.
Diaphoropsophus, Chaud., Bull. Mosc., xxiii (2), 1850, p. 407 : Lacord., Gen. Col., i, p. 221.
Dilobochilus, Laferté, *l.c. supra*, p. 293 : Lacord., Gen. Col., i, p. 222.
Dinodes, Bonelli, Obs. Ent., i, 1809, tabl. syn. : Laferté, *l.c. supra*, p. 264.

Epomis, Bonelli, *l.c. supra* : Laferté, *l.c. supra*, p. 252 : Lacord., Gen. Col., i, p. 223 : Chaud., *Mon.*, p. 120.
Eurydactylus, Laferté, *l.c. supra*, p. 255.
Glyptoderus, Laferté, *l.c.*, p. 260 : Chaud., *Mon.*, p. 75.
Homalolachnus Laferté, *l.c.*, p. 293 : Lacord., Gen. Col., i, p. 220 : Chaud., *Mon.* p. 26.
Lissauchenius, MacLeay, Annul. Javan., 1825, p. 13 : Lacord., Gen. Col., i, p. 217 : Chaud., *Mon.*, p. 34.
Ocybatus, Laferté, *l. c. supra*, p. 293 : Lacord., Gen. Col., i, p. 219 : Chaud., *Mon.*, p. 37.
Ocydromus, Laferté. *l.c.* p. 230.
Omalotrichus, Laferté, *l.c.* p. 233.
Poecilostus, Motsch., Bull. Mosc., xxxvii (4), 1864, p. 347.
Rhysotrachelus, Bohem., Ins. Caffr., i, , p. 133 : Lacord., Gen. Col., i, p. 220 : Chaud., *Mon.*, p. 29.
Tomochilus, Laferté, *l.c. supra*, p. 253.
Trichochlaenius, Seidlitz, Fauna Baltica, (ed. 2), 1887, p. 23.
Vertagus, Dejean, Spec., v, 1831, p. 608 : Lacord., Gen. Col., i, p. 219 : Chaud., *Mon.*, p, 31.

acroxanthus, Chaudoir, *Mon.*, p. 112.
Hab. Siam, Singapore, Java.

agilis, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 246 : *Mon.*, p. 193.
Hab. N. India.

amabilis, Chaudoir, *Mon.*, p. 279.
Hab. Siam.

amplipennis, Chaudoir, *Mon.*, p. 252.
Hab. Java.

apicalis (*Carabus*), Wiedemann, Zool. Mag., i (3), 1819, p. 166 : Dejean, Spec. ii, p. 324 : Chaud. *Mon.*, p. 89.
Hab. Bengal, Dekhan, Burma.

atripes, Chaudoir, *Mon.*, p. 160.
Hab. India, Dekhan.

bengalensis, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 262 : *Mon.*, p. 157.
princeps, Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 147 ; *id.*, Ann. Mag. N. H., (2s.) xx, 1857, p. 371.
quadricolor (*Poecilostus*), Motsch. (*nec* Oliv.), Bull. Mosc., xxxvii (3), 1864, p. 348.
Hab. N. India, Bengal, Tranquebar, Ceylon, Siam, Tchekian (China).

bicolor, Chaudoir, *Mon.*, p. 130.
Hab. Dekhan.

biguttatus, Motsch., Et. Ent., 1854, p. 63 ; *id.*, Bull. Mosc., xxxvii (3), 1864, p. 341 : Chaudoir, *Mon.*, p. 274.
subhamatus, Bates, Trans. Ent. S. Lond., 1873, p. 248 (*nec* Chaud.).
Hab. Japan, China, Yangtse Valley, Hongkong.

bihamatus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 210 ; *id.*, *Mon.*, p. 62.
hamifer, Bates, Trans. Ent. S. Lond., 1873.
Hab. N. India, Tranquebar, Borneo, Java, Hongkong.

bimaculatus, Dejean, Spec., ii, 1826, p. 301 : Lacord., Gen. Col., i, p. 218, note : Chaud., Mon., p. 51.
? flaviguttatus, MacLeay, Annul. Javan., 1825, p. 14 : Chaud., *Mon.*, p. 52.
var. *celebensis*, Schauf., Hor. Ent. Ross., xxi, 1887, p. 105.
Hab. India, Java, [*Ind. Mus.*, Bombay, N. Khasiya Hills, Andaman Islands].

binotatus, Dejean, Spec., ii, 1826, p. 302 : Chaud., *Mon.*, p. 48.
maculifer, Casteln., Not. Austr. Col., 1867, p. 62.
punctatus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 200.
puncticeps, Gemm. & Har., Mun. Cat., 1869, p. 224.
var. *biguttatus*, Montrouzier, Ann. Soc. Ent. Fr. (4s.) i, 1860, p. 237.
„ *guttatus*, Eschsch, Zool. Atlas, v, 1829, p. 26, t. 25, f. 8 : Fairm., Rev. Zool., 1849, p. 282.
Hab. Java, Sumatra, Philippines, Australia, New Guinea, New Caledonia.

bioculatus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 198 : *Mon.*, p. 50.
Hab. India, Dekhan, Coromandel.

birmanicus, Chaudoir, *Mon.*, p. 93, 95.
Hab. Burma, Rangoon.

braminus, Chaudoir, *Mon.*, p. 139.
Hab. Coromandel.

callichloris, Bates, Trans. Ent. S. Lond, 1873, p. 250 : Chaud., *Mon.*, p. 198.
Hab. Kiukiang on Yangtse, Japan.

Camillae, R. Gestro, Ann. Mus. Civ. Gen., (2s.) vi, 1888. p. 108.
Hab. Burma, Teintso.

celer, Chaudoir, *Mon.*, p. 201.
Hab. N. India, Dekhan.

chalcoderus, Chaudoir, *Mon.*, p. 139.
Hab. Siam, Bangkok.

chalcothorax (*Harpalus*), Wiedemann, Zool. Mag., ii (1), 1823, p. 51 : Dejean, Spec., ii, p. 304 : Chaud., *Mon.*, p. 138.
pubipennis, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 233.
Had. India, Tranquebar.

chlorodius, Dejean, Spec., ii, 1826, p. 365 : Chaud., *Mon.*, p. 176.
Hab. India, Cis Ganges [*Ind Mus.*, Madras].

cinctus (*Carabus*), Fabr., Ins., i, p. 310 : Herbst, Füsl. Arch., iv, 1783, p. 135, t. 29 f, 7 : Dejean, Spec., ii, p. 307 : MacLeay, Annul. Javan., p. 13 : Chaud., *Mon.*, p. 135 : Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 74.
pulcher, Nietner, Journ. As. Soc. Beng., xxv, 1856, p. 387 ; *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 242.
Hab. Bengal, Dekhan, Ceylon, Colombo (Bates) [*Ind. Mus.* Sibságar, Assam, ? China].

circumdatus, Brullé, Silb. Rev. Ent., iii, 1835, p. 283 : Chaud., Mon., p. 114 : Bates, Ann. Mag. N. H., (5s.) xvii, p. 74.

cupricollis, Nietner, Jour. As. Soc. Ben., xxv, 1856, p. 387 : Ann. Mag. N. H., (2s.) xix, 1857, p. 243.
limbatus, Dejean, Spec., ii, 1826, p. 306.
Hab. India, Bengal, Kandy & Colombo (Bates), ? Java.

contractus, Chaudoir, *Mon.*, p. 202.
Hab. Dekhan.

convexus, Fairmaire, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 310.
Hab. Yunnan.

costiger, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 258 ; *Mon.*, p. 95 : Bates, Trans. Ent. S. Lond., 1873, p. 253.
Hab. Hongkong, Formosa, Yangtse Valley, Japan.

crebrepunctatus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 204 ; *id.*, *Mon.*, p. 55.
Hab. N. India.

culminatus, Bates, Trans. Ent. S. Lond., 1873, p. 251.
Hab. ? Hongkong, Chekiang, Japan.

cupreolineatus, Chaudoir, *Mon.*, p. 158.
Hab. Siam, Bangkok.

cyaneonitens, Fairmaire, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 310.
Hab. Yunnan.

cyaniceps, Bates, Trans. Ent. S. Lond., 1873, p. 325 : Chaudoir, *Mon.*, p. 278.
Hab. Hongkong.

dilatatus (*Poeciloistus*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 348 : Chaudoir *Mon.*, p. 157.
Hab. India, Dekhan.

distigma, Chaudoir, *Mon.*, p. 49.
? = *aspericollis*, Bates, Trans. Ent. S. Lond., 1873, p. 248.
Hab. Singapur.

Doriae, Chaudoir, *Mon.*, p. 137.
Hab. Siam, Bangkok.

ducalis, Chaudoir, *Mon.*, p. 155.
Hab. India, Dekhan, Rangoon.

Duvaucelii (*Epomis*), Dejean, Spec., v, 1831, p. 668 : Motsch., Bull. Mosc., xxxvii (3), p. 344 : Chaudoir, *Mon.*, p. 122.
Hab. India, Bengal.

extremus, Chaudoir, *Mon.*, p. 112.
? = *postscriptus*, Bates, *q. v.*
Hab. Hongkong.

femoratus, Dejean, Spec., ii, 1826, p. 328 : Chaudoir, *Mon.*, p. 93, 94.
flavofemoratus, Casteln., Et. Ent., p. 81, t. 1., f. 3 : Chaud., Bull. Mosc., xxix (3), 1856, p. 244.
Hab. Java.

frater, Chaudoir, *Mon.*, p. 261 : Bates Ann. Mag. N. H., (5s) xvii, 1886, p. 74.
Hab. India, Malabar : ? Colombo (Bates).

? fuscomarginatus, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 345.
Hab. India.

fugax, Chaudoir, *Mon.*, p. 266.
Hab. N. India.

germanus, Chaudoir, *Mon.*, p. 199.
Hab. Laos.

Gestroii, Chaudoir, *Mon.*, p. 51.
Hab. Malacca, Macao.

guttula, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 216 : *Mon.*, p. 281.
Hab. Hongkong.

hamatus, Eschsch., Zool. Atlas, v, 1831, p. 26 : Dej. Spec., v, p. 633 : Chaudoir, *Mon.*, p. 63.
Hab. Philippines.

impressicollis, Chaudoir, *Mon.*, p. 236.
Hab. N. India.

inops, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 239 ; *id.*, *Mon.*, p. 262.
arcuaticollis, Motsch., Et. Ent., 1860, p. 7.
vestitus, Morawitz, *teste* Chaudoir, *Mon.*, *l.c.*
Hab. Formosa, Yangtse Valley, Chusan, Japan, Korea, Manchuria.

javanus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 229 : *Mon.*, p. 115.
Hab. Malaya, Java.

Lafertei, Guerin, Voy. Deless., 1843, p. 36 : Chaudoir, *Mon.*, p. 86.
centromaculatus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 218.
diffinis, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851 p. 241.
maculipennis, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 341.
Hab. India, Bengal, Pondicherry.

laetiusculus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 248 ; *Mon.*, p. 264.
Hab. N. India, Ceylon. [*Ind. Mus.*, Kargil, Turkistán].

laevipennis, Chaudoir, *Mon.*, p. 196.
Hab. Dekhan.

leucops (*Harpalus*), Wiedemann, Zool. Mag., ii (i), 1823, p. 52 : Chaudoir, *Mon.*, p. 71.
aeruginosus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 271.
Hab. N. India, Colombo, Philippines, Cochinchina, Ceram.

limbicollis, Chaudoir, *Mon.*, p. 41.
Hab. Dekhan, Formosa.

luteicauda, Chaudoir, *Mon.*, p. 201.
Hab. Dekhan.

luzonicus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 261 : *Mon.*, p. 159.
Hab. Philippines (Luzon).

lynx, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 199 : *Mon.*, p. 50.
Hab. Hongkong.

macropus, Chaudoir, *Mon.*, p. 140.
Hab. Dekhan.

maculatus, Dejean, Spec., ii, 1826, p. 300 : Chaud., *Mon.*, p. 99.
Hab. Dekhan, Siam.

marginifer, Chaudoir, *Mon.*, p. 118.
marginatus, Dejean, Spec., ii, 1826, p. 305 (*nec* Rossi).
Hab. India.

medioguttatus (*Lissauchenius*), Chaudoir, *Mon.*, p. 35.
Hab. Dekhan, Burma.

melanopterus, Chaudoir, *Mon.*, p. 226.
Hab. Siam, Ceylon (Peradeniya).

micans (*Carabus*), Fabr. Ent. Syst., i, 1792, p, 157; Syst. Eleuth., i, 1801, p. 151 : Chaudoir, Bull. Mosc., xxix (3), 1856, p. 201, 206 ; *id.*, *Mon.*, p. 62.
hamifer, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 209 ; *Mon.*, p. 62 : Bates, Trans. Ent. S. Lond., 1873, p. 247.
Hab. India, Zanzibar, [*Ind. Mus.*, Calcutta].

micans, MacLeay, Annul. Javan., 1825, p. 14 (*nec Fabr.*) : Chaud., *Mon.*, p. 52.
Hab. Java.

Mouhotii, Chaudoir, Col. Novit., i, 1883, p. 34.
Hab. Laos.

mutatus, Gemm. & Har., Mun. Cat., p. 222 : Chaudoir, *Mon.*, p. 52.
apicalis, MacLeay, Annul. Javan., 1825, p. 14 (*nec* Wied.).
Hab. Java.

naeviger, Morawitz, Bull. Acad. St. Petersb., 1862, p. 324 ; *id.*, Beitr. Käferfaun. Ins. Jesso, p. 33, t. 1, f. 16 : Bates, Trans. Ent. S. Lond., 1873, p. 246 : Chaud., *Mon.*, p. 273.
Hab. Ningpo, Hangkow, Nagasaki.

neelgheriensis, Guérin, Rev. Zool., 1840, p. 38 : Chaudoir, Bull. Mosc., xxix (3), 1856, p. 206 : *id.*, *Mon.*, p. 54.
bilunatus, Guérin, Voy. Deless., 1843, p. 36.
binotulatus, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 341.
formosus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 206.
maleolens, Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 148 ; Ann. Mag., (2s.) xx, 1857, p. 371.
Hab. Bengal, Nilgiris, Tranquebar, ? Zanzibar.

nepalensis, Hope, Gray, Zool. Misc., 1831, p. 21.
concinnus (*Barymorphus*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 236.
Mellyi (*Diaphoropsophus*), Chaudoir, Bull Mosc., xxiii (2), 1850, p. 407 ; *ib.*, (2), 1856, p. 213 ; *id.*, (*Rhysotrachelus*), *Mon.*, p. 30.
planicornis (*Barymorphus*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 236.
Swinhoei, Bates, Proc. Zool. S. Lond., 1866, p. 342.
Hab. India, Bengal, Malabar, Ceylon, Formosa [*Ind. Mus.*, China, Calcutta].

nigricans, Wiedemann, Germar, Mag. Ent., iv, 1821, p. 110, 6 : (*Epomis*) Dejean, Spec., ii, p. 371 : Chaudoir, *Mon.*, p. 126.
culminatus, Bates, Trans. Ent. S. Lond., 1873, p. 251.

rugicollis (*Epomis*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 253, note 1.
Hab. Hongkong, Chekiang, Formosa, Japan, ? Java.

nigricoxis, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 339 : Chaud., *Mon.*, p. 94.
Hab. Hongkong.

nigripennis, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 250 ; *Mon.*, p. 225.
Hab. N. India.

nitidicollis. Dejean, Spec , ii, 1826, p. 314 : Chaud., p. 117.
Hab. Bengal [*Ind. Mus.*, Sikkim].

opacipennis, Chaudoir, *Mon.*, p. 176.
Hab. Bengal.

orbicollis (*Ocybatus*), Chaudoir, *Mon.*, p. 40.
Hab. Nilgiris.

pachysomus, Chaudoir, *Mon.*, p. 117.
Hab. Siam.

panagaeoides (*Homalolachnus*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 235 ; Chaudoir, *Mon.*. p. 28.
Hab. India, Malabar.

parallelus, Dejean, Spec., v, 1831, p. 627 : Chaud., *Mon.*, p. 69.
Dohrnii, Nietner, Journ. As. Soc. Beng., xxvi, 1857, p. 149 ; Ann. Mag. N. H., (2s.) xx, 1857, p. 372.
Hab. Coromandel, Ceylon, Colombo.

pericallus, Redtenb., Reise Novara, Zool. ii, Col., 1867, t. 1, f. 4 : Chaud., *Mon.*, p. 286. : Bates, Trans. Ent. S. Lond., 1873, p. 249.
pulcher, Redtenb., *l.c.*, p. 10.
Hab. Hongkong, Kiukiang on Yangtsekiang (Bates), Japan (Osaka).

phaenoderus, Chaudoir, *Mon.*, p. 161.
? = *glabricollis*, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 348.
Hab. Dekhan.

pictus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 208 ; *id.*, *Mon.*, p. 62 : Bates, Trans. Ent. S. Lond., 1873, p. 247.
? = *Schönherrii*, Dejean, *q. v.*
Hab. N. India to N. China.

pleuroderus, Chaudoir, Col. Novit., 1883, p. 30.
Hab. India.

posticalis, Motschulsky, Et. Ent., 1853, p. 44 ; *id.*, Bull. Mosc., xxxvii (3), 1864, p. 340 : Chaud., *Mon.*, p. 273.
hospes, Morawitz, Beitr. z. Käfer Faun. Jesso. 1863, p. 32, t, 1, f. 15.
semipurpureus, Motsch., Bull. Mosc., *l.c. supra*, p. 340.
Hab. N. China, ? Canton.

posticus (*Carabus*), Fabr., Ent. Syst. Suppl., 1798, p. 57 ; *id.*, Syst. Eleuth., i, p. 191 : Chaud., *Mon.*, p. 55.
Hab. India.

postscriptus, Bates, Trans. Ent. S. Lond., 1873, p. 326 : Chaud., *Mon.*, p. 113, 156.
Hab. Hongkong.

pratensis, Chaudoir, *Mon.*, p. 210.
Hab. Shanghai, ? Canton.

pretiosus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 288 ; *id.*, *Mon.*, p. 178.
Hab. N. India.

prostenus, Bates, Trans. Ent. S. Lond., 1873, p. 325 ; 1883, p. 235 : Chaudoir, *Mon.*, p. 259.
Hab. Kiukiang on Yangtse river, Japan.

proximus, Chaudoir, *Mon.*, p. 113.
Hab. Dekhan.

pudicus? (*Carabus*), Fabr., Syst. Eleuth., i, 1801, p. 193 : Chaud., *Mon.*, p. 280.
malachinus (*Callistoides*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 335.
Hab. Bengal.

pugni, Camerano, Atti R. Acad. Soc. Turin., xiv, 1878, p. 146 : Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 306.
Hab. Burma, Mandalay.

punctatostriatus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 244 : *id.*, *Mon.*, p. 91.
Hab. N. India.

puncticollis, Dejean, Spec., ii, 1826, p. 315 : Chaudoir, *Mon.*, p. 196.
Hab. Bengal, N. India.

quadricolor (*Carabus*), Olivier, Enc. Méth., v, 1790, p. 344 ; *id.*, Ent., iii, 35, p. 77, t. 10, t. 111 : Fabr., Syst. Eleuth., i, p. 180 : Dejean, Spec., ii, p. 317 : Schaum, Stettin Ent. Zeit., 1847, p. 44 ; Chaudoir, *Mon.*, p. 154.
chlaenioides (*Amblygenius*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 263, ♀.
orientalis, Dejean. Spec.. ii, 1826, p. 339.
? laevicollis (*Poeciloistus*), Motsch., Bull. Mosc., xxxvii (4), 1864, p. 348.
Hab. India, Tranquebar, Bengal, Java [*Ind. Mus.*, Sikkim].

rudesculptus, Chaudoir, *Mon.*, p. 136.
Hab. Siam.

rufifemoratus (*Lissauchenius*), MacLeay, Annul. Javan., 1825, p. 13, t. 1, f. 1 : Chaud., Bull. Mosc., xxix (3), 1856, p. 198 : *Mon.*, p 35.
Hab. Java, Bangkok, India.

rufithorax, Wiedemann, Germ., Mag. Ent., iv, 1821, p. 112 : Dejean, Spec. ii, p. 322 : Chaudoir, *Mon.*, p. 259.
Hab. India.

rugulosus, Nietner, Journ. As. Soc. Beng., xxv, 1856, p. 388 ; Ann. Mag. N. H., (2s.) xix, 1857, p. 243 : Bates, *id.*, (5s.) xvii, 1886, p. 74 : Chaud., *Mon.*, p. 90.
Hab. Ceylon, Negumbo (*Nietn.*) : Kandy, Peradeniya (*Bates*).

scapularis, Chaudoir, *Mon.*, p. 98.
Hab. Bengal.

Schönherrii (*Vertagus*), Dejean, Spec.. v, 1831, p. 611 : Chaud., *Mon.*, p. 32.
? pictus, Chaudoir, *q. v.*
Hab. India, Africa.

Semperi, Chaudoir, *Mon.*, p. 92.
Hab. Philippines.

sericimicans, Chaudoir, *Mon.*, p. 235.
Hab. China, Hongkong.

sinensis, Chaudoir, Bull. Mosc. xxix (3), 1856, p. 263 : *Mon.*, p. 162.
Hab. Hongkong, Shanghai.

sinuatus, Dejean, Spec., ii, 1826, p. 321 : Chaudoir, *Mon.*, p. 194.
Hab. India.

sobrinus, Dejean, Spec., ii, 1826, p. 316 : Chaudoir, *Mon.*, p. 197.
Hab. India.

spathulifer (*Vertagus*), Bates, Trans. Ent. S. Lond., 1873, p. 324 ; Chaud., *Mon.*, p. 43.
Hab. China.

spoliatus (*Carabus*), Rossi, Fauna Etrusc., i, 1790, p. 33 : Chaudoir, *Mon.*, p. 88.
var. *inderiensis*, Motsch., *l.c.*, p. 346 [*Ind. Mus.*, Kargil, Turkistan].
„ *nicanus* (*Chlœnites*), Motsch., Bull. Mosc., xxxvii (4), 1864, p. 346 : Bates, Trans. Ent. S. Lond., 1873, p. 249.
Hab. Europe, N. Africa, Yangtse Valley, Japan.

stenoristus, Chaudoir, *Mon.*, p. 265.
Hab. India, Malabar.

? subhamatus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 211 : Bates, Trans. Ent. S. Lond., 1873, p. 248.
Hab. Kiukiang on Yangtse, Japan.

submarginatus, Chaudoir, *Mon.*, p. 235.
Hab. N. India, Rangoon.

Sykesii, Hope, Trans. Zool. S. Lond., 1833, p. 93, t. 13, f. 2.
Hab. India, Puna.

tetragonoderus, Chaudoir, *Mon.*, p. 68.
Hab. Sumatra, Macassar.

trinotatus, Chaudoir, *Mon.*, p. 179.
Hab. N. India.

varicornis, Morawitz, Käfer Jesso, 1863, p. 35, t. 1, f. 17 : Bates, Trans. Ent. S. Lond., 1873, p. 252 : Chaud., *Mon.*, p. 267.
Hab. China, Japan.

varipes, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 268 : *Mon.*, p. 87.
Hab. N. India.

velocipes, Chaudoir, *Mon.*, p. 266.
Hab. Bengal (Dacca), Siam, Ceylon (Dikoya), Nilgiris.

virgulifer, Chaudoir, *Mon.*, p. 61.
? pictus, Bates, Trans. Ent. S. Lond., 1873, p. 247.
Hab. Hongkong, N. China, ? Japan.

viridanus, Motsch., Bull. Mosc., xxxvii (3) 1864, p. 339 : Chaud., *Mon.*, p. 223.
Hab. India.

vividus, Chaudoir, *Mon.*, p. 176.
Hab. N. India.

vulneratus, Dejean, Spec., v, 1831, p. 624 : Chaudoir, Bull. Mosc., xxix (3), 1856, p. 203 ; *id.*, *Mon.*, p, 52.
Hab. N. India, Bengal.

xanthacrus, Wiedemann, Zool. Mag., (ii) i, 1823, p. 51 : Dejean, Spec. ii, p. 323 : Chaud., *Mon.*, p. 8. (gen dub. ? *Lachnophorus*).
Hügelii, Redtenb., Reise Novara, Zool. ii, Col., 1867, p. 9, t. 1, f. 3.
Hab. Bengal, Calcutta.

xanthopleurus, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 230 ; *id.*, *Mon.*, p. 115.
Hab. Hongkong, Formosa, Chusan, N. China, Japan.

xanthospilus (*Carabus*), Wiedemann, Germar, Mag. Ent., iv, 1821, p. 115 : Chaud., *Mon.*, p. 285.
quinquemaculatus, Nietner, Journ. As. Soc. Ben., xxv, 1856, p. 386 ; *id.*, Ann. Mag. N. H., (2 s.) xix, 1857, p. 242.
Hab. Dekhan, Ceylon, Siam.

Genus **PENTHIMUS**.

Mun. Cat., p. 229 : Chaudoir, Ann. Mus. Civ. Gen., viii, 1876, p. 291.
Ceroglossus, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 192 (*nec* Solier).
Harpoglossus, Motschulsky.

opacus (*Ceroglossus*), Chaudoir, Bull. Mosc., xxx (3), 1857, p. 6.
Hab N. India.

Genus **HOLOLIUS**.

Laferté Senect., Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 274 : Lacord., Gen. Col., i, p 227 : Mun. Cat., p. 230 : Chaudoir, Bull. Mosc., xxx (3), 1857, p. 9 ; *id.*, Ann. Mus. Civ. Gen., viii, 1876, p. 290 ; Col. Nov., 1883, p. 37.
Hololeius, Laferté Senect., *l.c. supra*.

nitidulus (*Chlaenius*) Dejean, Spec., ii, 1826, p. 341 : Laferté, *l. c. supra*.
ceylanicus, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 385 ; *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 241 ; Bates, *ib.*, (5s.) xvii, 1886, p. 75.
var. *punctulatus*, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 10 ; *id.*, Ann. Mus. Civ. Gen., viii, p. 291.
Hab. India, Ceylon, Kandy, Hongkong.

Genus **RHOPALISTES**.

Mun. Cat., p. 230 : Chaudoir, Ann. Mus. Civ. Gen., viii, 1876, p. 291.
Rhopalopalpus, Laferté Senect., Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 262 : Chaudoir, Bull. Mosc., xxx (3). 1867, p. 11.

janthinus (*Chlaenius*), Redtenb., Hügel's Kaschm., iv (2), 1844, p. 500 : Chaudoir, Ann. Mus. Civ. Gen., viii, p. 292.
poeciloides, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 262 : (*Rhopalopalpus*) Chaudoir, Bull. Mosc., xxx (3), 1857, p. 11, ♀.
Hab. N. India, Kashmir.

Genus **PRISTOMACHAERUS.**

Bates, Trans. Ent. S. Lond., 1873, p. 323.

chalcocephalus (*Panagaeus*), Wiedemann, Zool. Mag., ii (i), 1823, p. 57 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 433 : Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 84.

chlorocephalus, Kollar, Ann. Mus. Wien. i., 1836, p. 335, t. 31, f. 4-6.

Hab. N. India [*Ind. Mus.* ? Jhelam Valley].

Messii, Bates, Trans. Ent. S. Lond, 1873, p. 324.

Hab. Hongkong.

quadricolor, Putzeys, Stettin. Ent. Zeit., xxxviii, 1877, p. 101.

Hab. Darjiling.

quadriguttatus, Putzeys, *l.c.*, p. 101.

Hab. Darjiling.

Genus **CALLISTUS.**

Bonelli, Obs. Ent., 1809, tab. syn. : Lacord., Gen. Col., i, p. 374 : Mun. Cat., p. 213 : Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 395 ; *ib.*, xlv (i), 1872, p. 384 : Schaum, Berlin. Ent. Zeits., vii, 1863, p. 85.

Callistomimus, Chaudoir, Bull. Mosc., xlv (i), 1872, p. 382.

coarctatus, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 230.

littoralis, Motschulsky, Et. Ent. 1859, p. 33.

Westwoodii, Schaum, Berlin Ent. Zeits., vii, 1863, p. 85.

Hab. N. India, Tranquebar, Ceylon.

Dicksonii (*Callistomimus*), Waterhouse, Ann. Mag. N. H., (5s.) xiv, 1884, p. 429.

Hab. Formosa.

modestus, Schaum, Berlin Ent. Zeits., vii, 1863, p. 85 : Chaudoir, Bull. Mosc., xlv (i), 1872, p. 382 : Bates, Trans. Ent. S. Lond., 1873, p. 246 : Fairm., Ann. Soc. Ent. Fr., (6 s.) viii, 1888, p. 336.

Hab. Tonkin, China, Hongkong, Canton, Nagasaki.

suturalis, Fleutiaux, Ann. Soc. Ent. Fr., (6s.) vii, 1887, p. 61, t. 4, f. 2.

Hab. Annam, Hué.

Div. **OODINI**:—Chaudoir, Bull. Mosc., xxx (3), 1857, p. 13 ; *id.*, *Monograph*, Ann. Soc. Ent. Fr., (6s.) ii, 1882, p. 317, 485.

Genus **ANATRICHIS.**

Leconte, Trans. Ann. Phil. Soc., x, 1853, p. 391 : Chaudoir, Bull. Mosc., xxx (3), 1857, p. 21 ; *id.*, *Mon.*, *l.c. supra*, p. 318 : Bates, Biol. Centr. Amer., Col., i (i) p. 269.

Oodinus, Motschulsky, Bull. Mosc., xxxvii (4), 1864, p. 352.

Oodes. pt, Dejean, Spec., v, p. 677.

indicus, Chaudoir, *Mon.*, p. 320.

Hab. Dekhan.

pedinoides, Chaudoir, *Mon.*, p. 321.

Hab. India.

Genus **SYSTOLOCRANIUS.**

Chaudoir, Bull. Mosc., xxx (3), 1857, p. 23 ; *id.*, *Monograph*, Ann. Soc. Ent. Fr., (6s) ii, 1882, p. 326 : Mun. Cat., p. 231.

Chlaenius, Boheman.

Oodes, Wiedemann, Eschscholtz, Dejean, Gory, Laferté.

linea *(Oodes)*, Wiedemann, Germar Mag. Ent., iv, 1821, p. 113 ; Chaudoir, *Mon.*, p. 331.

grandis (Oodes), Dejean, Spec., ii, 1826, p. 376.

Hab. India, Bengal.

sulcatus, Eschsch., Zool. Atlas., v, 1829, p. 28 : Chaud., *Mon.*, p. 335 : *id.*, (*nec* Laferté), Bull. Mosc., xxx (3), 1857, p. 25. (*sp. dub*).

Hab. Philippines, Manilla.

Genus **OODES.**

Bonelli, Mem. Acad. Turin, 1809, *tab. syn.* : Lacord., Gen. Col., i, p. 229 ; Mun. Cat., p. 231 : Chaudoir, Bull. Mosc., xxx (3), 1857, p. 25 ; *id.*, *Monograph*, Ann. Soc. Ent. Fr., (6s.) ii, 1882, p. 341 : Horn, Gen. Carab., p. 172.

Lonchosternus, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 267 : Lacord., Gen. Col., i, p. 231.

Stenocrepis, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 45 ; Mun. Cat., p. 234.

Stenous, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 39 : Mun. Cat., p. 233.

chalceus, Chaudoir, Bull. Mosc. , xxx (3), 1857, p. 30 ; *Mon.*, p. 357.

nepalensis, Motsch., Et. Ent., 1858, p. 171 ; Bull. Mosc., xxxvii (4), 1864, p. 353.

subolivaceus, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 271, note 4.

Hab. Nepál, N. India.

coelestinus, Chaudoir, *Mon.*, p. 363.

Hab. Borneo, Sarawak.

parallelus, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 271, note 5 : Chaudoir, *Mon.*, p. 347.

Hab. N. India, Dekhan, Malacca.

piceolus, Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 93.

Hab. China, Fokien.

piceus, Nietner, Journ. As. Soc. Ben., xxv, 1856, p. 526 ; *id.* Ann. Mag. N. H., (2s.) xix, 1857, p. 377.

vilis, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 32 ; *Mon.*, p. 369.

Hab. Assam, Tranquebar, Ceylon, Siam, China, Macassar.

siamensis, Chaudoir, *Mon.*, p. 358.

Hab. Siam, Bangkok.

subcoriaceus, Chaudoir, *Mon.*, p. 362.

Hab. Malacca.

varians, Chaudoir, *Mon.*, p. 352.

Hab. Bengal.

virens, Wiedemann, Zool. Mag., ii (i), 1823, p. 50.

Hab. Bengal.

Westermannii, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 271, note 2 : Chaud., Bull. Mosc., xxx (3), 1857, p. 31 ; *Mon.*, p. 368.
hispanicus (Oodes), pt. Dejean, Spec., ii, 1826, p. 379.
Hab. India, Bengal, Dekhan.

Genus **SIMOUS.**

Chaudoir, *Monograph*, Ann. Soc. Ent. Fr., (6s.) ii, 1882, p. 373.

aeneus, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 270, note 4 : Chaud., *Mon. l.c. supra*, p. 375.
Hab. Java.

lucidus (*Oodes*), Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 76 ; *Mon.*, p. 376.
Hab. Siam, Annam, Cambodia.

Mouhotii, Chaudoir, Rev. Mag. Zool., (2s.) xxi, p. 76 ; *Mon.*, p. 373.
Hab. Laos.

nigriceps *(Oodes)*, Wiedemann, Germar, Mag. Ent., iv, 1821, p. 114 : Chaudoir, *Mon.*, p. 375.
pulcher (*Oodes*), Dejean, Spec., ii, 1826, p. 375.
Hab. India.

Genus **LACHNOCREPIS.**

Leconte, Trans. Am. Phil. S., x, 1853, p. 391 : Lacord., Gen. Col., i, p. 394 : Mun. Cat., p. 230 : Chaudoir, *Monograph*, Ann. Soc. Ent. Fr., (6s.) ii, 1882, p. 377.

japonicus, Bates, Trans. Ent. S. Lond., 1873, p. 255 : Chaudoir, *Mon.*, 378.
Hab. Yangtse Valley, Japan.

Genus **HOLCOCOLEUS.**

Chaudoir, Ann. Soc. Ent. Fr., (6s) ii, 1882, p. 521.
Oodes, Laferté, Chaudoir, *olim.*

sulcatulus *(Oodes)*, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 38 ; *id.*, *Mon.*, *l.c. supra*, p. 522.
latus (Oodes), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 269, note 2.
Hab. Nilgiris.

Genus **MELANODES.**

Chaudoir, *Monograph*, Ann. Soc. Ent, Fr., (6s.) ii, 1882, p. 545.
Oodes, Erichson : *Chlaenius*, Laferté : *Poecilus*, Reiche : *Feronia*, Klug.

pernitidus, Chaudoir, *Mon.*, *l.c.*, p. 550.
Hab. Dekhan, Rangoon.

subelongatus, Chaudoir, *Mon.*, *l.c.*, p. 550.
Hab. Dekhan.

Genus **PATELLUS.**

Chaudoir, *Monograph*, Ann. Soc. Ent. Fr., (6s.) ii, 1882, p. 551 : Zool. Jahr., Arthr., 1883, p. 212.

drimostoides, Chaudoir, *Mon.*, *l.c. supra*, p. 553.
Hab. Burma.

ZABRINI :—Horn, Gen. Carab., p. 173.

Genus **ZABRUS.**

Clairville, Ent. Helv., ii, 1806, p. 80 : Zimmermann, Monograph Carabiden, 1831 : Lacord., Gen. Col., i. p. 330 : Schaum, Revision, Berlin. Ent. Zeits., 1864, p. 174 : Mun. Cat , p. 334 : Horn, Gen. Carab., p. 174.

Pelor, Bonelli, Mém. Acad. Turin., Obs. Ent., 1813. tab.

Pelorosomus, Motschulsky.

Polysitus, Zimmermann, Mon. Carab., 1831, p. 8.

chinensis, Fairmaire, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 313.

Hab. Yunnan.

HARPALINI, Horn, Gen. Carab., p. 174 : Leconte & Horn, Class. Col., p. 52.

Anisodactylides, pt, Lacordaire, Gen. Col., i, p. 268.

Cratocerides, pt, Lacordaire, *l.c.*. p. 257.

? Ditomides, pt, Lacordaire, *l.c.*, p. 165.

Harpalides, Lacordaire, *l.c.*, p. 285.

Horn (*l.c. supra*) divides this tribe into *Dapti*, *Glypti*, *Harpali*, and *Anisodactyli*.

Genus **LIODAPTUS.**

Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 102.

birmanus, Bates, *l.c.*, p. 102.

Hab. Burma, Bhamo, Mandalay.

Genus **BARYSOMUS.**

Dejean, Spec., iv, 1829, p. 56 : Lap. de Casteln., Hist. Nat. Ins., i, p. 94 : Lacord., Gen. Col., i, p. 290 : Mun. Cat. p. 261 : Bates, Biol. Centr. Amer., Col., i (i), p. 67.

Oosoma, Nietner, Journ. As. Soc. Beng., xxvi, 1857, p. 144 ; Ann. Mag. N. H., (2s.) xx, 1857, p. 368.

Gyllenhalli, Dejean, Spec., iv, 1829, p. 59. : Lap. de Casteln., Hist. Nat. Ins., i, p. 95.

arenarius (Oosoma), Neitner, Journ. As. Soc. Ben., xxvi, 1857, p. 146 ; Ann. Mag. N. H., (2s.) xx, 1857, p. 370.

Hab. India, Ceylon, Colombo (Bates).

semivittatus (*Carabus*), Fabr., Syst. Eleuth., i, 1801, p. 201 : Dejean, Spec., iv, p. 60 : Lap. de Casteln., *l.c. supra*. p. 95.

Gerstaeckeri, Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 147 ; Ann. Mag. N. H., (2s.) xx, 1857, p. 370.

Hab. India, Ceylon.

subæneus (*Amara*), MacLeay, Annul. Javan., 1825, p. 21.

Hab. Java.

subolivaceus (*Amara*), MacLeay, *l.c.*, p. 21.

Hab. Java.

tricolor (*Amara*), MacLeay, *l.c.*, p. 21.

Hab. Java.

Genus **BRADYBAENUS.**

Dejean, Spec., iv, 1829, p. 160 : Lacord., Gen. Col., i, p. 292 : Mun. Cat., p. 261.

Calodromus, Nietner Ann. Mag. N. H., (3s.) ii, 1859, p. 181.

festivus, Dejean, Spec., iv, 1829, p. 163: Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 77.
exornatus (*Calodromus*), Nietner, Ann. Mag. N. H, (3s.) ii, 1858, p. 181.
ornatus, Redtenb., Reise Novara, Zool. ii, Col., 1867, p. 14, t. 1, f. 8.
Hab. Ceylon, Kandy (*Bates*).

Genus **HYPSINEPHUS.**

Bates, Proc. Zool. S. Lond., 1878, p. 715.

ellipticus, Bates, *l.c.*, p. 716.
Hab. N. W. Himalaya, Pangong Valley [*Ind. Mus.*, type].

Genus **PANGUS.**

Leconte, Trans. Am. Philad., x, 1853, p. 385: Lacord., Gen. Col., i, p. 295: Mun. Cat., p. 267.

infixus, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 204 (*gen. dub.*).
Hab. Ceylon.

orientalis (*Selenophorus*, *Pangus*), Dejean, Spec., iv, 1829, p. 128.
Hab. India.

quadricollis, Kollar, Hügel's Kaschm., iv (2), 1844, p. 502.
Hab. Kashmir.

Genus **HYPOLITHUS.**

Dejean, Spec., iv, 1829, p. 166: Lacord., Gen. Col., i, p. 295: Mun. Cat., p. 268.

javanus, Gory, Ann. Soc. Ent. Fr., 1833, p. 241.
Hab. Java.

perlucens, Bates. Proc. Zool. S. Lond., 1878, p. 715.
Hab. India, Jhelam Valley [*Ind. Mus.*, type].

Genus **HARPALUS.**

Latreille, Hist. Nat. Ins., viii, 1804, p. 325: Lacord., Gen. Col., i, p. 295: Mun. Cat., p. 272: Horn, Gen. Carab., p. 181.
Actephilus, Motschulsky, Bull. Mosc., xxxviii (3), 1864, p. 208.
Amblystus, Motschulsky, *l.c.*, p. 209.
Artabas, Gozis, Mt. Schw. Ent. Ges., 1883, p. 287.
Bioderus, pt, Motschulsky, Käfer Russl., 1850, t, vii.
Conicus, Motschulsky, Bull. Mosc., xxxviii (3), 1864, p. 209.
Erpeinus, Motschulsky, *l.c.*, p. 208.
Harpalidium, Kolbe, Berlin Ent. Zeits., 1883, p. 17.
Harpalodes, Motschulsky, *l.c. supru.*, p. 208.
Holosus, Motschulsky, Bull. Mosc., xxx (2), 1857, p. 496.
Ovistus, Motschulsky, *l.c.*, xxxvii (3), 1864, p. 209.
Pheuginus, Motschulsky, *l.c.*, p. 209.
Platus, Motschulsky, Cat. Carab. Russ., 1850.
Pseudoophonus, pt, Motschulsky, Ins. Sib., 1842, p. 196.
[This synonymy requires examination and revision].

advolans, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 226 *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 377.
Hab. Ceylon.

cephalotes (*Pseudoophonus*), Motschulsky, Et. Ent., 1861, p. 3 ; Bull. Mosc., xxxvii (3), 1864, p. 214.
capito, Morawitz, Bull. Acad. St. Petersb., v, 1862, p. 359 : Bates, Trans. Ent. S. Lond., 1873, p. 260.
Hab. Yangtse Valley, Nagasaki, Ussuri.

chalcentus, Bates, *l.c. supra*, p. 263.
Hab. Canton, Yangtse Valley, Korea, Nagasaki.

* **coeruleatus**, Bates, Proc. Zool. S. Lond., 1878, p. 714.
Hab. Yangi Hissar [*Ind. Mus.*, type].

crates, Bates, Trans. Ent. S. Lond., 1883, p. 239, note.
Hab. Hongkong, Yangtse Valley, Korea.

cyanescens, Hope, Trans. Ent. S. Lond., iv, 1845, p. 15.
Hab. China.

difficilis, Hope, *l.c.*, p. 15.
Hab. China.

griseus, Panzer, Fauna Germ., 38,1797 : Dejean, Spec., iv, p. 251 : Schaum, Naturges, Ins., i, p. 584.
bicolor, Marshall, Ent. Brit., i, p. 436.
ruficornis, var., Illiger, Käfer Preuss., i, 1798, p. 171 : Morawitz, Beitr. z. Käf. Jesso, i, p. 68.
var. *Reichei*, Desbrochers, Nat. Ent. Bourb., 1866, p. 42.
Hab. Europe, E. Siberia, Japan, China, Shanghai, ? Canton.

indicola, Bates, Proc. Zool. S. Lond., 1878, p. 714.
Hab. India, Murree [*Ind. Mus.*, type].

laevistriatus, Sturm, Abbild. Oliv. Ent. Käfer, 4, 1803, p. 80 t. 91, f. B.
Hab. India.

leucops, Wiedemann, Zool. Mag., ii (i), 1823, p. 52.
Hab. Bengal.

* **liodes**, Bates, Proc. Zool. S. Lond., 1878, p. 715.
Hab. ? near Yarkand [*Ind. Mus.*, type].

* **masoreides**, Bates, *l.c.*, p. 715.
Hab. Pamir [*Ind. Mus.*, type].

melaneus, Bates, *l.c.*, p. 714.
Hab. India, Murree. Sind Valley, Leh. [*Ind. Mus.*, type].

punctilabris, MacLeay, Annul. Javan., 1825, p. 20.
Hab. Java.

punctulatus, MacLeay, *l.c.*, p. 21.
Hab. Java.

relucens, Bates, Trans. Ent. S. Lond., 1873, p. 264.
Hab. Fuchau, Nagasaki.

rugicollis (*Plutus*), Motschulsky, Et. Ent., 1860, p. 5 : Harold, Abh. Nat. Ver. Bremen, iv, 1875, p. 285 ; Bates, Trans. Ent. S. Lond., 1883, p. 236.
japonicus, Morawitz, Bull. Acad. St. Petersb., v, 1862, p. 227 ; Beitr. z. Käfer Faun. Jesso, i, 1863, p. 69 ; Bates, *l.c. supra*, 1873, p. 261.
Hab. Formosa, Fuchau, Shanghai, Yangtse Valley, Japan [*Ind. Mus.*, Murree].

sinicus, Hope, Trans. Ent. S. Lond., iv, 1845, p. 14.
Hab. China.

tinctulus, Bates, Trans. Ent. S. Lond., 1873, p. 263.
Hab. Canton, Yangtse Valley, Korea, Nagasaki.

trechoides, Hope, Trans. Ent. S. Lond., iv, 1845, p. 15.
Hab. China.

tridens, Morawitz, Beitrag. Käfer. Faun. Jesso., i, 1863, p. 69 : Bates, Trans. Ent. S. Lond., 1883, p. 236.
Hab. Canton, Japan.

* **turculus**, Bates, Proc. Zool. S. Lond., 1878, p. 714.
Hab. ? near Yarkand [*Ind. Mus.*, type].

Genus **IRIDESSUS**.

Bates, Trans. Ent. S. Lond., 1883, p. 240.

relucens, Bates, *l.c.*, 1873, p. 264 ; 1883, p. 240.
Hab. Fuchau, Nagasaki.

Genus **GNATHAPHANUS**.

MacLeay, Annul. Javan., 1825, p. 20 : Lacord., Gen. Col., i, p. 299 : Chaudoir, Ann. Mus. Civ. Gen., xii, 1878. p. 503 : Mun. Cat., p. 286.

aereus, Schaufuss, Horae Ent. Ross., xxi, 1887, p. 105.
Hab. China, Macassar.

subcostatus, Dejean, Spec., iv, 1829, p. 261 : Lacord., Gen. Col. i. p. 299.
? = *vulneripennis*, MacLeay, *q. v.*
Hab. India [*Ind. Mus.*, Tenasserim].

vulneripennis, MacLeay, Annul. Javan., 1825, p. 20 : Hope, Col. Man., ii, t. 2, f. 2, *a-d* : Erichs., Wieg. Arch. (2), 1840, p. 317.
Hab. India.

Genus **CARICUS**.

Motsch., Bull. Mosc., xxxix (2), 1886. p. 394.
testaceipes, Motsch., *l.c.*, p. 394.

Hab. Ceylon, Colombo.

Genus **STENOLOPHUS**.

Dejean, Spec., iv, 1829, p. 405 ; Lacord., Gen. Col., i, p. 303 ; Mun. Cat., p. 290 : Horn, Gen. Carab., p. 181.
Acupalpus, Latreille, Règne Anim., (2ed.) iv, 1829, p. 391 : Lacord., Gen. Col., 1, p. 302 : Mun. Cat., p. 287.

Anthracus, Motschulsky, Bull. Mosc., xxxvii (4), 1864, p. 207. Balion, Schiödte.
Egadroma, Motschulsky, Et. Ent., 1855, p. 43 ; *id.*, *l.c. supra*, p. 201.
Manicellus, Motschulsky, Bull. Mosc., xxxvii (4), 1864, p. 207.
Megrammus, Motschulsky, Et. Ent., 1857, p. 26.
Philodes, Leconte, Class. Col., 1861, p. 33.

apicalis (*Egadroma*), Motsch., Bull. Mosc., xxxvii (4), 1864, p. 205.
Hab. India, Tranquebar.

biplagiatus, Bohem., Freg. Eug. Resa. Col., 1858, p. 12.
Hab. China.

chalceus, Bates, Trans. Ent. S. Lond., 1873, p. 270.
Hab. Yangtse Valley, Japan.

connotatus, Bates, *l.c.*, p. 327.
Hab. Yangtse Valley, Japan.

cancellus, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 103.
Hab. Burma, Rangoon, Mandalay, Bhamo.

derogatus (*Acupalpus*), Walker, Ann. Mag. N. H., (2s.) ii, 1858, p. 204 : *ib.*, Bates, (5s.) xvii, 1886, p. 80.
Hab. Ceylon, Nuwara Eliya (*Bates*).

gonidius, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 104.
Hab. Burma, Bhamo, Teintso, Thagata (Tenasserim).

guttula (*Acupalpus*), Dejean, Spec., v, 1831, p. 858.
Hab. India.

inornatus (*Acupalpus*), Bates, Trans. Ent. S. Lond., 1873, p. 268.
Hab. Yangtse Valley, Japan.

iridicolor, Redtenb., Reise Novara, Zool. ii, Col., 1867, p. 16.
Hab. Hongkong.

lucidus (*Stenolophus*), Dejean, Spec., iv, 1829, p. 419.
proximus, Falderm., Fauna Ent. Transcauc., iii, 1838, p. 86.
Hab. India, Caucasus.

minimus (*Acupalpus*), Dejean, Spec., iv, 1829, p. 483.
Hab. India.

nitens (*Egadroma*), Motsch., Bull. Mosc., xxxvii (4), 1864, p. 205.
Hab. Bombay.

opaculus, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 80.
Hab. Ceylon, Nuwara Eliya.

polygenus, Bates, *l.c.*, p. 79.
Hab. Ceylon, Nuwara Eliya.

proximus (*Stenolophus*), Dejean, Spec., iv, 1829, p. 420 ; *id.*, Ic., t. 198, f. 4.
Hab. S. Russia, Japan, Shanghai.

quinquepustulatus (*Badister*), Wiedemann, Zool. Mag., ii (i), 1823, p. 58 ; (*Stenolophus*) Dejean, Spec., iv, p. 414 : Bates, Trans. Ent. S. Lond., 1873, p. 270 ; Ann. Mag., N. H., (5s.) xvii, 1886, p. 79.

Hab. Japan, China, Yangtse Valley, Cochinchina, Bengal, Ceylon, Colombo, (*Bates*).

smaragdulus (*Carabus*), Fabr., Ent. Syst. Suppl., 1798, p. 60 : (*Stenolophus*) Dejean, Spec., iv, 1829, p. 418 : Lap. de Casteln., Hist. Nat. Ins., i, p. 90 : (*Egadroma*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 205.
stolidus (*Harpalus*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 204.
vulneratus, Dejean, Spec., v, 1831, p. 852.
Hab. India, Ceylon.

splendida (*Egadromo*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 205.
Hab. Burma.

Genus **ANOPLOGENIUS**.

Chaudoir, Bull. Mosc., xxv (i), 1852, p. 88 : Lacord., Gen. Col., i, p. 304 : Mun. Cat., 292.
? *Compsolepis*, Nietner.
Lepithrix, Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 151 : Ann. Mag., (2s.) xx, 1857, *l.c.*, p. 374.
Loxoncus, Schmidt Goebel, Faun. Col. Birm., 1846, on wrapper : Motsch., Bull. Mosc., xxxvii (4), 1864, p. 204.

circumcinctus, Motsch., Et. Ent., 1857, p. 26 : Bates, Trans. Ent. S. Lond., 1873, p. 269.
Hab. Yangtse Valley, Ningpo, Fuchau, Shanghai, Japan.

discophorus, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 90.
Hab. N. India, Simla.

elevatus (*Loxoncus*), Schmidt Goebel, Faun. Col. Birm., 1846, t. 3, f. 9.
Hab. Burma.

foliolosus (*Lepithrix*), Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 152 ; *id.*, Ann. Mag. N. H., (2s.) xx, 1857, p. 374 : Bates, *l.c.*, (5s.) xvii, 1886, p. 79.
Hab. Ceylon.

microgonus, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 78.
Hab. Ceylon, Colombo, Siam.

renitens, Bates, *l.c.*, p. 79.
Hab. Ceylon, Colombo.

utilans, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 103.
Hab. Burma, Katha.

Genus **BRADYCELLUS**.

Erichson, Käfer Mark. Brand., i, 1837, p. 64 : Lacord., Gen. Col., i, p. 294 : Mun. Cat., p. 263 : Horn, Gen. Carab., p. 294 : Bates, Biol., Centr. Amer., Col., i (i), p. 71.
Liocellus, Motschulsky, Bull. Mosc., xxxvii (4), 1864, p. 207.

laeticolor, Bates, Trans. Ent. S. Lond., 1873, p. 267.
Hab. Yangtse Valley, Nagasaki.

marginale (*Drimostoma*), Walker, Ann. Mag. N. H. (3s.) iii, 1859, p. 51.
Hab. Ceylon.

sinicus, Bates, Trans. Ent. S. Lond., 1873, p. 328.
Hab. Yangtse Valley.

Genus OXYCENTRUS.

Chaudoir, Bull. Mosc., xxvii (2), 1854, p. 345 : Mun. Cat., p. 249.

angustus, Bates, Trans. Ent. S. Lond., 1876, p. 3, note, ♂.
Hab. Burma, Rangoon.

borneensis, Bates, *l.c.*, p. 4, note, ♂.
Hab. Borneo.

parallelus, Chaudoir, Bull. Mosc., xxvii (2), 1854, p, 347.
Hab. N. India.

Genus TACHYCELLUS.

Morawitz, Bull. Acad. Petr., v, 1863, p. 261 : Mun. Cat., p. 264 : Horn, Gen. Carab., p. 182.

lamprus, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 80.
Hab. Ceylon, Colombo.

Genus DICHIROTRICHUS.

Jacq. Duval, Gen. Col. Carab., 1855, p. 35 : Mun. Cat., p. 262.

* **alticola**, Bates, Proc. Zool. S. Lond., 1878, p. 713.
Hab. Pámîr [*Ind. Mus.*, type].

amplipennis, Bates, Trans. Ent. S. Lond., 1873, p. 326.
Hab. Shanghai.

Genus CALATHOMIMUS.

Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 77.

consors, Bates, *l.c.*, p. 78.
Hab. Ceylon, Bogawantalawa.

maculatus, Bates, *l.c.*, p. 77.
Hab. Ceylon, Bogawantalawa.

Genus DIORYCHE.

MacLeay, Annul. Javan., 1825, p. 21 : Lap. de Casteln., Hist. Nat. Ins., i, p. 123 : Lacord., Gen. Col., i, p. 309 : Mun. Cat., p. 287.
Platymetopus, Dejean, Spec., iv, 1829, p. 68 : Lacord., Gen. Col., i, p. 300 : Bates, Trans. Ent. S. Lond., 1873, p. 121.

amoena *(Platymetopus)*, Dejean, Spec., iv, 1829, p. 73.
Hab. Java.

colombensis, Nietner, Jl. As. Soc. Beng., xxvi, 1857, p. 151 ; Ann. Mag. N. H., (2s.) xx, 1857, p. 373 : *ib.*, Bates, (5s.) xvii, 1886, p. 76.
Hab. Ceylon, Colombo.

corrosa, Bates, Trans. Ent. S. Lond., 1873, p. 270.
Hab. Yangtse Valley, Fuchau, Japan.

interpunctata *(Platymetopus)*, Dejean, Spec., iv, 1829, p. 71: Klug, Ins. Madag., p. 133.
Hab. India, Coromandel.

laticeps *(Platymetopus)*, Dejean, Spec., iv, 1829, p. 76.
Hab. Philippines, Manilla.

melanaria, Boheman, Freg. Eug. Resa, Col., 1858, p. 10.
Hab. China.

quadrimaculata *(Platymetopus)*, Dejean, Spec., iv, 1829, p. 70 : Lap. de Casteln., Hist. Nat. Ins., i, p. 92.
Hab. Cochinchina.

rugosa, Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 150; Ann. Mag. N. H., (2s.) xx, 1857, p. 373.
Hab. Ceylon, Colombo.

senilis, Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 150; Ann. Mag. N. H., (2s.) xx, 1857, p. 372.
Hab. Ceylon, Colombo.

Thunbergii, Quensel, Schönh., Syn., i, 1806, p. 188, note : Dejean, Spec., iv, p. 74 : Erichson, Wiegm. Arch., (2) 1840, p. 367 : Bates, Trans. Ent. S. Lond., 1873, p. 271.
Hab. ? Cape of Good Hope, ? India.

torta, MacLeay, Annul. Javan., 1825, p. 21 : Hope, Col. Man., ii, 1838, t. 2, f. 4 *a-d* : Lap. de Casteln., Hist. Nat. Ins., i, p. 123 : Bates, Trans. Ent. S. Lond., 1873, p. 271.
Hab. Java.

Genus **AMBLYSTOMUS.**

Erichson, Käfer Mark Brand., i, 1837, p. 59 : Lacord., Gen. Col., i, p. 301 : Mun. Cat., p. 143.
Hispalis, Rambur, Faun. Andal., 1838 : Motsch., Bull. Mosc., xxxvii (3), 1864, p. 233, *tab. syn.*
Megaristerus, Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 427 : Mun. Cat., p. 286.

aenescens, Motschulsky, Et. Ent., 1858, p. 23 : *(Hispalis) id.*, Bull. Mosc., xxxvii (3), 1864, p. 233.
Hab. India.

biguttatus, Motschulsky, Et. Ent., 1858, p. 25 : *(Hispalis) id.*, Bull. Mosc., *l.c.*, p. 234.
Hab. India, Tranquebar.

femoralis, Motschulsky, Et. Ent., 1858, p. 24 ; *(Hispalis) id.*, Bull. Mosc., *l.c.*, p. 233.
Hab. India.

flavipes, Motschulsky, *l.c.*, p. 23 ; (*Hispalis*) *id.*, Bull. Mosc., *l.c.*, p. 233.
Hab. India.

fuscescens, Motschulsky, *l.c.*, p. 23 ; *(Hispalis) id.*, Bull. Mosc., *l.c.*, p. 233.
Hab. India.

guttatus, Bates, Trans. Ent. S. Lond., 1873, p. 327.
Hab. China, Fuchau.

indicus (*Megaristerus*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 428.
Hab. Ceylon, Kitugalle (*Bates*), Madras.

mandibularis (*Megaristerus*), Nietner, *l.c.*, p. 428.
Hab. Ceylon, Colombo.

pallipes, Motschulsky, Et. Ent., 1858, p. 24; (*Hispalis*) *id.*, Bull. Mosc., xxxvii (3), 1864, p. 233.
Hab. India.

quadriguttatus, Motschulsky, *l.c.*, p. 24; (*Hispalis*) *id.*, Bull. Mosc., *l.c.*, p. 234.
Hab. India.

stenolophoides (*Megaristerus*), Nietner, *l.c. supra*, p. 428.
Hab. Ceylon, Colombo.

Genus **SIOPELUS**.

Murray, Ann. Mag. N. H., (3s.) iii, 1859, p. 27 : Mun. Cat., p. 287.

ferreus, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 76, 211.
?=*compositus* (*Curtonotus*), Walker, *l.c.*, (3s.) ii, 1858, p. 204.
Hab. Ceylon, Newara Eliya.

Genus **ANISODACTYLUS**.

Dejean, Spec., iv, 1829, p. 132 : Lacord., Gen. Col., i, p. 278 : Mun. Cat., p. 254 : Horn, Gen. Carab., p. 184 : Bates, Biol. Centr. Amer., Col., i (i), p, 52.
Amphasia, Newman, Ent. Mag., v, 1838, p. 387 : Lacord., Gen. Col. i, p. 277 : Mun. Cat., p. 254.
Anisotarsus, Chaudoir, Bull. Mosc., x, 1837, p. 41 : Lacord., Gen. Col., i, p. 279 : Mun. Cat., p. 257.
Aplocentrus, Leconte, Geod. Un. St., 1846, p. 108.
Dicheirus, Mannerheim, Bull. Mosc., xvi, 1843, p. 211.
Eurytrichus, Leconte, Geod. Col. Un. St., in Ann. Lyc. Nat. Hist. N. York, iv, 1846, and separate, p. 115 : Mun. Cat., p. 257.
Gynandromorphus, Dejean, Spec., iv, 1829, p. 186 : Lacord., Gen. Col., i, p. 283 : Mun. Cat., p. 258.
Gynandrotarsus, Laferté-Sénectere, Ann. Soc. Ent. Fr., (2s.) x, 1852, p. 202 : Lacord., Gen. Col., i, p. 283.
Spongopus, Leconte, Geod. Col. Un. St., *l.c. supra*, iv, 1846, p. 277; sep. p. 105 : Mun. Cat., p. 258.
Triplectrus, Leconte, *l.c.*, p. 108.
Xestonotus, Leconte, Trans. Amer. Phil., x, 1853, p. 383 : Mun. Cat., p. 258.

dispellens, Walker, Ann. Mag. N. H., (3s.) iii, 1859, p. 51 : Bates, *l.c.*, (5s.) xvii, 1886, p. 75.
Hab. Siam, Ceylon, Kandy, Hongkong, Fuchau.

javanus, Dejean, Spec., iv, 1829, p. 146.
Hab. Philippines.

signatus, Illiger. Käfer Preuss., i, 1798, p. 174 : Panzer, Faun. Germ., 38, 4; Dejean Spec., iv, p. 138 : Schaum, Nat. Ins., i, p. 565.
rusticus, Dahl, Col. & Lep., 1823, p. 11.
Hab. Europe, Siberia, China, Canton (*Putzeys*).

Genus **LAMPROPHONUS**.

Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 101.

lucens, Bates, *l.c.*, p. 3.
Hab. Burma.

Genus **CHYDAEUS**.

Chaudoir, Bull. Mosc., xxvii (2), 1854, p. 343 : Mun. Cat., p. 254.

obscurus, Chaudoir, *l.c. supra*, p. 344.
Hab. N. India.

Genus **HYPHARPAX**.

MacLeay, Annul. Javan., 1825, p. 22 : Lacord., Gen. Col., i, p. 282 : Mun. Cat., p. 258 : Chaudoir, Ann. Mus. Civ. Gen., xii, 1878, p. 496.
Sagraemerus, Redtenb., Reise Novara, Zool. ii, Col., 1867, p. 13.

dentipes (*Harpalus*), Wiedemann, Zool. Mag., ii (i), 1823, p. 54 : Chaudoir, *l.c. supra*, p. 500:
?=lateralis MacLeay, *q.v.*
Hab. Java.

javanus (*Sagraemerus*), Redtenb., Reise Novara, Zool., ii, Col., 1867, p. 14, t. 1, f. 7.
Hab. Java.

lateralis, MacLeay, Annul. Javan., 1825, p. 22 : Hope, Col. Man., ii, t. 2, f. 3 *a-e* Lap. de Casteln., Hist. Nat. Ins., i, p. 123.
Hab. Java.

simplicipes, Chaudoir, Ann. Mus. Civ. Gen., xii, 1878, p. 502.
Hab. Java.

Genus **HYPHAEREON**.

MacLeay, Annul. Javan., 1825, p. 22 : Lacord., Gen. Col., i, p. 284 : Mun. Cat., p. 259.

reflexus, MacLeay, *l.c. supra*, p. 22 : Hope, Col. Man., ii, t. 2, f. 5 *a-c*.
Hab. Java.

PSEUDOMORPHINI:—Westwood, Rev. Mag. Zool., v, 1853, p. 395 : Lacord., Gen. Col., i, 1854, p. 149 : Horn, Gen. Carab., p. 186 : Leconte & Horn, Class. Col., p. 58.

Genus **ADELOTOPUS**.

Hope, Trans. Ent. S. Lond., i, 1834, p. 11 : Westwood, Rev. Mag. Zool., v, 1853, p. 403 : Lacord., Gen. Col., i, p. 153 : Mun. Cat., p. 157.

collaris, Waterhouse, Trans. Ent. S. Lond., 1877, p. 2.
Hab. Siam.

Genus **CRYPTOCEPHALOMORPHA**.

Ritsema, Tijds. v. Ent., xviii, 1875, p. xcii.

Gaverei, Ritsema, *l.c.*, p. xciii ; *ib.*, xxxii, p. lxxxviii.
marginatus, Waterhouse, Trans. Ent. S. Lond., 1877, p. 2.
Hab. Java, Batavia.

ADDITIONS.

OMOPHRON.—P. 6—

axillaris, Chaudoir, Rev. Mag. Zool., (2s.) xx, 1868, p. 59. Hab. Bengal.

guttatus, Chaudoir, *l.c.*, p. 62. Hab. Bengal.

interruptus, Chaudoir, *l.c.*, p. 62. Hab. Bengal.

levigatus, Gestro, Ann. Mus. Civ. Gen. (2s.) vi, 1888, p. 172. Hab. Burma.

porosus, Chaudoir, Rev. Mag. Zool., (2s.) xx, 1868, p. 61. Hab. Dekhan.

saigonensis, Chaudoir, *l.c.*, p. 57. Hab. Cochinchina, Saigon.

striaticeps, Gestro, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 173. Hab. Burma.

P. 12—The reference to *Carabus indicus*, is Bull. Soc. Ent. Fr., (6s.) ix, 1889, p. xv. Hab. Darjiling.

MOUHOTIA, p. 17.

Batesii, Lewis, Ent Mon. Mag., xvi, 1879, p. 183: Waterhouse, Aid, t. 125, f. 3. Hab. Burma.

PSEUDOZAENA.—P. 32—

spissicornis, Fairmaire, Ann. Soc. Ent. Fr., (6s.) viii, 1888, p. 335. Hab. Laos.

PRISTONYCHUS.—P. 54—

alticola, Fairmaire, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. xvi.
Hab. Himálaya, Mt. Yeomitong (11,000—12,000 feet) [*Ind. Mus.*]

Add also:—

P. 96—**Broscus Davidianus**, Fairmaire, Ann. Soc. Ent. Belg., xxxii, 1888, p. 7. Hab. Yunnan, Hongkong.

P. 97—**Chlaenius hemichlorus**, Fairmaire, *l.c.*, p. 8. Hab. Yunnan.

P. 44—**Stobeus collucens**, Fairmaire, *l.c.*, p. 8. Hab. Yunnan.

P. 44—**Aurisma Delevayii**, Fairmaire, *l.c.*, p. 9. Hab. Yunnan.

P. 44—**Steropanus forticornis**, Fairmaire, *l.c.*, p. 10. Hab. Yunnan.

P. 44—**Omaseus stictopleurus** Fairmaire, *l.c.* p. 10. Hab. Yunnan.

P. 44—**Steropus licinoides**, Fairmaire, *l.c.*, p. 10. Hab. Yunnan.

P. 44—**Steropus scuticollis**, Fairmaire, *l.c.*, p. 11. Hab. Yunnan.

P. 44—**Pterostichus haesitatus**, Fairmaire, *l.c.*, p. 11. Hab. Yunnan.

P. 44—**Abax tantillus**, Fairmaire, *l.c.*, p. 12. Hab. Yunnan.

P. 53—**Calathus strigipennis** Fairmaire, *l.c.*, p. 12. Hab. Yunnan.

P. 53—**Calathus nubilipennis**, Fairmaire, *l.c.*, p. 13. Hab. Yunnan.

P. 54—**Agonum dorsistriatum**, Fairmaire, *l.c.*, p. 13. Hab. Yunnan.

P. 56—**Dyscolus ovipennis**, Fairmaire, *l.c.*, p. 14. Hab. Yunnan.

P. 39—**Patrobus microphthalmus**, Fairmaire, *l.c.*, p. 14. Hab. Yunnan.

P. 50—**Amara orientalis**, Hope Trans. Ent. S. Lond iv, 1845, p. 14. Hab. China.

P. 61—**Perigona Beccarii**, Putzeys = **fimicola**, Wollast.

P. 95—**Brachynus pictus**, add to references after '92', 't. 13, f. 1': and at end '[*Ind. Mus.*, Dehli].'

P. 56—**Colpodes superlita**, Bates, Proc. Zool. S. Lond, 1888, p. 383, Kiukiang.
„ „ **melittus**, Bates, *l.c.*, 1889, p. 215. Goorais Valley.
„ „ **eulabes**, Bates, *l.c.*, p. 215. Goorais Valley.

P. 70—**Lebia coelestis**, Bates, *l.c.*, 1888, p. 380. Kiukiang.
„ „ **chrysomia**, Bates, *l.c.*, p. 382. Kiukiang.
„ „ **caliata**, Bates, *l.c.*, p. 382. Kiukiang.
„ „ **xanthophana** Bates, *l.c.*, p. 382; *ib.*, 1889, p. 218. Kinkiang, Ichang.

P. 70—**Lebia prattiana**, Bates, *l.c.*, 1889, p. 218. Ichang.
" " **callitrema**, Bates, *l.c.*, p. 219. Ichang.
P. 97—**Chlaenius anchomenoides**, Bates, *l.c.*, p. 212. Goorais Valley.
P. 111—**Harpalus kashmirensis**, Bates, *l.c.*, p. 213. Goorais Valley.
" " **idiotus**, Bates. *l.c.*, p. 213. Goorais Valley.
P. 53—**Pristodactyla lacerans**, Bates, *l.c.*, p. 214. Goorais Valley.
" " **agonoides**. Bates, *l.c.*, p. 218 Ichang.
P. 54—**Pristonychus kashmirensis**, Bates, *l.c.*, p. 214. Goorais Valley.
P. 55—**Anchomenus mesostictus**, Bates, *l.c.*, p. 215. Goorais Valley.
P. 10—**Carabus Tientei**, Thoms., var. *minor*, Bates, *l.c.*, p. 217. Ichang.
" " **ichangensis**, Bates, *l.c.*, p. 217, ♂. Ichang.
" " **protenes** Bates, *l.c.*, p. 217. Ichang.
" " **kiukiangensis** Bates, *l.c.*, 1888, p. 381. Kiukiang.
" " **dardiellus**, Bates, *l.c.*, 1889, p. 211. Goorais Valley, Kashmir.
var. *granulisparsus*, Bates, *l.c.*
" " **barysomus**, Bates, *l.c.*, p. 210. Goorais Valley.
P. 13—**Carabus** (*Coptolabrus*) **angustus**, Bates, Proc. Zool. S. Lond., 1888, p. 387. Kiukiang, Yangtse Valley.
var. *ignimitella*, Bates, *l.c.*
" " " **principalis**, Bates, *l.c.*, 1889, p. 216. Ichang, Yangtse Valley.
" " " **pustulifer**, Lucas, var., Bates, *l.c.*, p. 217. Ichang.
" " " **longipennis**, Chaudoir, Bates, *l.c.*, p. 217. Ichang.
P. 16—**Nebria himalayica**, Bates, *l.c.*, p. 212. Goorais Valley.
P. 34—**Bembidion bracculatum**, Bates, *l.c.*, p. 212. Goorais Valley.
" " **dardum**, Bates, *l.c.*, p. 212. Goorais Valley.

CORRECTIONS.

P. 26—for '**Neitnerii**,' read '**Nietnerii**.'
P. 28—line 5 from top, for '*Gestro*.' read '*Bates*.'
P. 30—line 19 from top, for '*metailicus*,' read '*metallicus*.'
P. 34—for '**MORIOIDIUS**,' read '**MORIONIDIUS**.'
P. 42—for '*Comottoii*,' read '*Comottii*.'
P. 65—for '*dimdiata*, read '*dimidiata*.'
P. 72—line 22 from top, for '*Rhinotheila*,' read '*Rhinocheila*.'

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1.—*Catalogue of the* Insecta *of the Oriental Region.* No. 4, *Order* Coleoptera, *Family* Dytiscidæ.—*By* E. T. Atkinson, B. A.

Dr. D. Sharp's monograph entitled 'On aquatic carnivorous Coleoptera or Dytiscidæ' (Scientific Transactions, Royal Dublin Society, (2s.) ii, 1881-2) renders the preparation of the 'Catalogue of the Dytiscidæ,' a comparatively easy task. Mr. Sharp's elaborate work is prefaced by a general description of the position of the family, its extent, and some criticisms on the taxonomy; whilst another chapter is devoted to a detailed description of the structure. In the prefatory chapter, Mr. Sharp remarks:—"We possess already in the Munich Catalogue of Coleoptera a work in which a large proportion of synonyms are well recorded, and I have considered the existence of this valuable production sufficient reason for omitting the synonymy already recorded therein, and have contented myself with citing in the alphabetical index of this work such names as are necessary to establish a harmony between it and the catalogue in question. For a similar reason it forms no part of my plan to give a history of the previous and present condition of the taxonomy of the family, nor a list of all the writers who have described species belonging to it, both of these can be gathered from the Munich Catalogue."

Following a like procedure, I give those species recorded in the Munich Catalogue with their synonymy and a reference to the place in which they are noticed in Mr. Sharp's work, and for those described since 1868, the synonymy admitted by him. Up to the year 1882, Dr. Sharp's monograph and the Munich Catalogue may be considered safe and sufficient guides to the study of this family. In Mr. Sharp's work, there is some departure from the ordinary practice in the record of species, which are given under the genus and specific name of the original describer, whilst the genera under which they are placed have neither author's names nor references. It is difficult therefore to ascertain whether the genus of Dr. Sharp is the same as the genus of the original describer, or even, in any strict sense, belongs to it. Therefore the references to the genera in the following Catalogue must be understood to be subject to the modifications introduced by Dr. Sharp in his diagnoses. It would be impossible for me to distinguish accurately between the various phases which successive emendations and sub-divisions have given rise to in a genus, nor would this be the proper place to attempt such a task. Broadly, Dr. Sharp divides the *Dytiscidæ* into two main groups, *Dytisci Fragmentati* (p. 963)

and *Dytisci Complicati* (p. 964), according to whether the metathoracic episternum reaches the intermediate coxal cavity or not. These are further sub-divided into the tribes *Noterides* (p. 260,944), *Hydroporides* (p. 319,950), *Colymbetides* (p. 490,956), and *Hydaticides* (p. 647,959), but the details of this arrangement cannot be followed here.

As already noticed in the 'Catalogue of the Carabidæ,' Dr. Horn raises the *Haliplini*, *Amphizoa*, and *Hydrachna** (*Pelobius*), to the rank of families. There is a strong consensus of opinion that to elevate these aberrant genera to the position of families and thus place them on a level with a family like the *Carabidæ* is a step to be regretted as likely to lead to the unnecessary splitting up of other families on equally good grounds. The proper place for these groups appears to be as sub-families of the aquatic carnivora, uniting the *Dytiscidæ* proper with the terrestrial carnivora. For convenience the name *Dytiscidæ* may be applied to the whole group. Lacordaire † writes of the *Haliplini* that ces insectes n'appartiennent réellement pas non plus à la famille (*Dytiscidæ*) par leurs pattes; les tarses postérieurs surtout ressemblent complêtement à ceux d'une foule des Carabiques, leurs articles étant grêles, allongés et chacun un peu renflé à leur extremité.' He adds that the characters given should place them at the head of the *Dytiscidæ* which they connect with the *Carabidæ*. Dr. Sharp ‡ in his paper on the classification of the *Dytiscidæ*, removed the *Haliplini* from that family and left it to 'the Carabophiles to decide whether they should be considered *Carabidæ* or form a distinct family.' Subsequently, however, he makes them a separate family §.

Lacordaire makes the genus *Amphizoa* also a tribe or sub-family, 'qui présente un singulier mélange des caractères des Dytiscides et des Carabiques. Par ses organes buccaux, sa tête, ses antennes, et la non-contiguité des parapleures méta-thoraciques avec la base de l'abdomen, il appartient aux premiers, tandisque par ses pattes complètement ambulatoires, son prosternum reçu dan un sillon du mésosternum comme chez les Carabides, et la séparation de ses saillies coxales, il rentre dans les seconds.' It thus diminishes the differences between the aquatic and the terrestrial Carnivora. Leconte originally placed this singular genus in a distinct family and Chaudoir makes it a distinct group near to *Trachy-*

* I do not understand the grounds on which the name *Hydrachna* for this genus (1801) has been sunk in favour of *Paelobius* (*Pelobius*) Schönherr (1806), the species '*tarda* Herbst,' the type given by Fabricius, being still considered as belonging to the genus.

† Gen. Col. i p. 410.

‡ C. R. Soc. Ent Belg., xxiii, 1880, p. cxlvii; Dytisc., p. 971.

§ Biol. Centr. Amer., Col, i (2), 1882, p. 1.

pachys. Dr. Sharp at first placed it amongst the *Dytiscidæ*, but subsequently agreed * with Dr. Horn that it should be removed from the *Dytiscidæ* and treated like *Pelobius*.

Pelobius was also formed into a distinct group by Lacordaire who remarks that 'cette tribu ne comprend qu'un seul genre, mais qui ne peut être associé á aucun de ceux qui précèdent ou qui suivent: ses hanches postérieures le rattachent aux Haliplides, ainsi qui les tarses de la même paire sont à peine plus natatoires,' and declares it to be another of the aberrant genera connecting the *Carabidæ* with the *Dytiscidæ*. Describing the genus itself he gives it as 'un Dytiscide pourvu d'une tête de Carabique.' Notwithstanding, therefore, the great authority of Dr. Horn, it will, in the present state of our knowledge, be advisable to retain Lacordaire's arrangement as that most convenient. Below is given a list of some of the writings on the *Dytiscidæ* of the Oriental Region.

Aube, C. :—
Species général des Hydrocanthares et Gyriniens pour faire suite au Species général des Coléoptères de la collection de M. Le Comte Dejean, vi, Paris, 1838.

Blanchard, E. :—
Voyage au Pole Sud sur l'Astrolabe, Zool., iv, Paris, 1853.

Boheman, C. :—
Kongliga Svenska Fregatten Eugenies resa, Col., Stockholm, 1858.

Clark, H. :—
Transactions Entomological Society London, (3s) i, 1863, p. 413.

Erichson, W. F. :—
Die Käfer der Mark Brandenburg, Berlin, i, 1837.

MacLeay, W. S. :—
Annulosa Javanica, or an attempt to illustrate the natural affinities and analogies of the insects collected in Java by Dr. T. Horsfield. London, 1825.

Motschulsky, V. :—
Etudes entomologiques, Helsingfors, iv, 1855 : viii, 1859.

Redtenbacher, L. :—
Hügel's Kaschmir, iv (2), 1844. Stuttgard.

Regimbart, M. :—
'Recherches sur les organes copulateurs dans le genre *Dytiscus*,' in Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 263.
Etude sur la classification des Dytiscides, *l. c.*, viii, 1878, p. 447.
'Dytiscides de Birmanie', in Ann. Mus. Civ. Gen., (2s) vi, 1888, p. 609.

Schaum and Kiesenwetter :—
Naturges. d. Ins. Deutschl., i, ii, 1859-60.

* Dytisc., p. 274.

Sharp, D. :—
'Avis préliminaire d'une nouvelle classification des Dytiscides,' in C. R. Soc. Ent. Belg., xxiii, 1880, p. cxlviii.
'Observations on the respiratory action of the Carnivorous water-beetles,' in Jl. Linn. S. Lond., xiii, 1877, p. 161.
'On aquatic Carnivorous Coleoptera,' in Scient. Trans. Royal Dublin Society, 1882.

Vander Branden, C. :—Catalogue des coléoptères Carnassiers aquatiques, in Ann. Soc. Ent. Belg., 1885.

Wehncke, E. :—
Deutsche entomologische Zeitschrift, 1873, 1875.
Berliner entomologische Zeitschrift, xv, xvi, xix.
Stettiner entomologische Zeitung, 1875-7.

HALIPLINI :—Shuckard, Elem. Brit. Ent., 1839 : (*Haliplides*) Aubé, Spec. vi : Lacordaire, Gen. Col. i, 1854, p. 410 : Jacq. Duv., Gen. Col., i, p. 69 : Crotch, Revision, Trans. Amer. Ent. Soc., iv, 1873, p. 383.
Haliplidæ, Horn, Gen. Carab., 1881, p. 91 : Leconte & Horn, Class. Col., 1883, p. 60, 539 : Sharp, Biol. Centr. Amer., Col., i (2), 1882, p. 1.

Leconte observes that the species of this sub-family are aquatic in their habits, of small size, oval, more or less pointed behind and in front, and very convex ; their colour is usually yellowish, more or less spotted with black : scutellum, concealed : antennæ 10-jointed, glabrous, filiform.

Genus **HALIPLUS**.

Latreille, Hist. Nat. Ins., iii, 1802, p. 77 ; Gen. Crust. Ins., i, 1806, p. 234 : Brullé, Hist. Nat. Ins., ii, p. 201 : Lacord., Gen. Col., i, p. 411 : Jacq. Duval, Gen. Col. Eur., i, 1857, p. 69 : Mun. Cat., p. 425 : Crotch, Col. Hefte, vi, p. 95 : Sharp, Biol. Centr. Amer., Col., i (2), p. 2 : Leconte & Horn, Class. Col., p. 61.
Cnemidotus. Illiger, Mag. Ent., i, 1802, p. 373 : Lacord., Gen. Col., i, p. 411 : Mun. Cat., p. 427 : Sharp, Biol. Centr. Amer., Col., i (2), p. 1.
Hoplitus, Clairville, Ent. Helv., ii, 1806, p. 218.

brevis, Wehncke, Stettin. Ent. Zeit., xl, 1880, p. 75.
Hab. China.

maculipennis, Schaum, Berlin. Ent. Zeits., 1864, p. 107.
Hab. Egypt [*Ind. Mus.*, var., Pankong Valley, N. W. Himálaya].

oceanicus, Régimbart, Notes Leyden Museum, viii, 1886, p. 139.
Hab. Sumatra.

pulchellus, Clark, Trans. Ent. S. Lond., (3s.) i, 1863, p. 418 : Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 147.
Hab. Siam, Annam, Cochinchina, Malacca.

Sharpii, Wehncke, Stettin. Ent. Zeit., xli, 1880, p. 74.
Hab. China, Japan.

sinensis, Hope, Trans. Ent. S. Lond., iv, 1845, p. 15.
Hab. China.

variabilis, Clark, Trans. Ent. S. Lond, (3s) i, 1863, p. 417.
Hab. China, Amoy, Canton, Corea.

Genus **PELTODYTES.**

Régimbart, Ann, Soc. Ent. Fr., (5s.) viii, 1878, p. 450, 477.
Cnemidotus, Erichson, Gen. Dytic., 1832, p. 48 (*nec* Illiger) : Leconte & Horn,, Class. Col., p. 61.

sumatrensis, Régimbart, Notes Leyden Mus., vii, 1885, p. 55.
Hab. Sumatra.

AMPHIZOINI :—(*Amphizoides*) Lacordaire, Gen. Col., i, 1854, p. 409.
Amphizoidæ, Horn, Gen. Carab., 1881, p. 92 : Leconte & Horn, Class. Col., 1883, p. 59, 539.
The species of this subfamily are of small size, and are found clinging to logs and stones under the surface of streams.

Genus **AMPHIZOA.**

Leconte, Proc. Acad. Phil., vi, (Jan.) 1853, p. 227 : Lacord., Gen. Col., i, p. 409 : Matthews, Cist. Ent., 1872, p. 119 : Horn, Rep. Un. St. Geol. Surv., 1872-73, p. 717 : Sharp, Dytisc., p. 317, 844, 974 : Leconte & Horn, Class. Col., p. 59.
Dysmathes, Mannerheim, Bull. Mosc., xxvi (3), (July) 1853, p. 264 : Lacord., Gen. Col., v, p. 60 : Mun. Cat., p. 1834 : Sallé, Bull. Soc. Ent. Fr., (5s.) iv, 1874, p. ccxxii.

Davidis, Lucas, Bull. Soc. Ent. Fr., (6s.) ii, 1882, p. clvii.
Hab. E. Tibet, Moupin.

HYDRACHNINI :—
Pelobides, Lacordaire, Gen. Col., i, 1854, p. 412.
Pelobidæ, Horn, Gen. Carab., 1881, p. 92 : Sharp, Dytisc., p. 259, 827, 974.

Genus **HYDRACHNA.**

Fabr., Syst. Eleuth , i, 1801 p. 225 : Latreille, Hist. Nat. Crust. Ins. iii, 1802, p. 76 : Mun. Cat., p. 427.
Hygrobia, Latreille, Gen. Crust. Ins., i, 1806, p. 233 : *Hygrobia* auct.
Hyphydrus, Latreille, *l.c.*, p. 233.
Paetobius, Schönherr. Syn. Ins., ii, 1808, p. 27.
Pelobius, Brullé, Hist. Nat. Ins. Col., ii. p. 204 : Jacq. Duval, Gen. Col. Eur., i, p. 70 : Sharp, Dytisc., p. 259, 827, 974, *et auct.*
There are but three other species of this genus described, one European and two Australian. They are of moderate size, very convex beneath, the surface very densely punctured, not pubescent.

Davidii (*Hygrobia*), Bedel, Bull. Soc. Ent., Fr., (6s.) iii, 1883, p. xxiii.
Hab. China, Kiangsi.

DYTISCINI : Sharp, Dytisc., p. 527. 967 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 3 : Leconte & Horn, Class. Col., 1883, p. 61.
Hydrocanthares, Latreille, Hist. Nat. Crust. Ins., iii, 1802, p. 74 ; *id.*, Gen. Crust. Ins., i, 1806 p. 228 : Brullé, Hist. Nat. Ins., Col., ii, 1835, p. 182. *Dyticidæ*, Westwood, Class. Ins., i, 1839, p. 95.
The *Dytiscini* are aquatic in their habits, and differ from the *Carabidæ* chiefly in the absence of the antecoxal piece of the metasternum, and the natatorial legs.

Dytiscifragmentati, Sharp, Dytisc., p. 258.

Noterides, Sharp, *l.c.*, p. 260 : Leconte & Horn. Class. Col., 1883, p. 63.

NOTOMICRINI :—

Genus **NOTOMICRUS**.

Sharp, Dytisc., 1881, p. 260, 834 ; *id.*, Biol. Centr. Amer., Col., i, (2), p. 3 : Leconte & Horn, Class. Col., p. 63.

tenellus (*Hydroporus*), Clark, Trans. Ent. S. Lond., (3s.) i, 1863, p. 427 : Sharp, Dytisc., p. 812.
Hab. Java.

HYDROCOPTINI :—

Genus **HYDROCOPTUS**.

Motschulsky, Hydrocanth. Russ., 1853, p. 5 : (*Hydroporus*) Mun. Cat., p. 429 : Sharp, Dytisc., p. 261, 834.

bivittis, Motsch., Et. Ent., 1859, p. 44 : Sharp, Dytisc., p. 262 : Régimb., Ann. Mus., Civ. Gen., (2s.) vi, 1888, p. 610.
Hab. N. India, Burma, Bhamo.

distinctus, Wehncke, Deutsche Ent. Zeits., xxvii, 1883, p. 147.
rubescens, Sharp, Dytisc., p. 262 (*nec* Clark).
?=*rufulus*, Motschulsky, *q.v.*
Hab. Java, Sumatra, Siam.

rubescens (*Hydroporus*), Clark, Trans. Ent. S. Lond., (3s) i, 1863, p. 426 : Wehncke, Deutsche Ent. Zeits, 1883, p. 147 : Règimb., Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 610 ; *id.*, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 147.
Hab. Java, Borneo, Saigon, Siam, Burma, Bhamo, India.

rufulus, Motschulsky, Etud. Ent., 1859, p. 44 : Sharp, Dytisc., p. 785.
?=*distinctus*, Wehncke, *q.v.*
Hab. India, Burma.

Sharpii, Wehncke, Deutsche Ent. Zeits., xxvii, 1883, p. 147.
Hab. Burma.

vittatus, Sharp, Dytisc., p. 262.
Hab. India, Borneo, Sarawak.

NOTERINI :— Sharp, Dytisc., p. 263, 919 : Leconte & Horn, Class. Col., p. 63.

Genus **NOTERUS**.

Clairville, Ent. Helv., ii, 1806, p. 22 : Brullé, Hist. Nat. Ins. Col., ii, p. 209 : Lacord., Gen. Col., i, p. 418 : Mun. Cat., p. 443 : Sharp, Dytisc., p. 265, 836.

granulatus, Régimbart, Notes Leyden Mus., v, 1883, p. 225.
Hab. China.

HYDROCANTHINI :—Sharp, Dytisc., p. 268, 920.

Genus **CANTHYDRUS**.

Sharp, Dytisc., p. 269, 838 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 5 : Leconte & Horn, Class. Col., p. 63.

angularis, Sharp, Dytisc., p. 277.
Hab. Singapur.

bifasciatus, Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 148.
Hab. Cambodia.

festivus, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 610.
Hab. Burma, Rangoon.

flammulatus, Sharp, Dytisc., p. 278 : Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 609 ; *id.*, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 149.
Hab. Burma, Bhamo, Rangoon, Siam, Cochinchina, Celebes.

flavus (*Hydrocanthus*), Motschulsky, Et. Ent., 1855, p. 83 : Sharp, Dytisc., p. 279 : Régimbart, Ann. Gen., *l.c.*, *supra*, p. 610 ; *id.*, Ann. Fr., *l.c. supra*, p. 150.
Ritsemæ (*Hydrocanthus*), Régimbart, Notes Leyden Mus., ii, 1880, p. 213 ; Midden Sumatra, iv, 6 t. 1, f. 7.
Hab. China, Formosa, Siam, Cochinchina, Burma, Rangoon, India.

frontalis, Sharp, Dytisc., p. 276.
Hab. Arabia, Bombay.

fulvescens, Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 149.
Hab. Annam, Cochinchina.

Haagii (*Hydrocanthus*), Wehncke, Deutsche Ent. Zeits., xx, 1876, p. 222 : Sharp, Dytisc., p. 278.
Hab. Siam.

javanus, Wehncke, Deutsche Ent. Zeits., xxvii, 1883, p. 149.
Hab. Java.

laetabilis (*Hydroporus*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 205 : Sharp, Dytisc., p. 277.
orientalis (*Hydrocanthus*), Wehncke, Deutsche Ent. Zeits., xx, 1876, p. 222.
Hab. India, Madras, Tranquebar.

luctuosus (*Hydrocanthus*), Aubé, Dejean Spec., vi, 1838, p. 408 : Sharp, Dytisc., p. 276.
Hab. India.

Morsbachii (*Hydrocanthus*), Wehncke, Deutsche Ent. Zeits., xx, 1876, p. 222 : Sharp, Dytisc., p. 276.
Hab. Cochinchina.

nitidulus, Sharp, Dytisc., p. 278 : Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 147.
Hab. Formosa, N. China, Assam.

politus (*Hydrocanthus*), Sharp, Trans. Ent. S. Lond., 1873, p. 51 ; Dytisc., p. 278.
Hab. Japan, China.

proximus, Sharp, Dytisc., p. 278.
Hab. Siam.

Semperii (*Hydrocanthus*), Wehncke, Deutsche Ent. Zeits., xx, 1876, p. 223; *ib.*, 1883, p. 149 : Sharp, Dytisc., p. 275.

auritus (*Hydrocanthus*), Régimbart, Bull. S. E. Fr., (5s.) vii, 1877, p. lxxix; *ib.*, Ann., p. 359 : Sharp, Dytisc., p. 783.
Hab. Philippines Manilla.

sexpunctatus, Sharp, Dytisc., 276.
Hab. India.

testaceus (*Hydrocanthus*), Boheman, Freg. Eug. Resa, Col., 1858, p. 19 : Sharp, Dytisc., p. 784.
Hab. China.

Weisei (*Hydrocanthus*), Wehncke, Deutsche Ent. Zeits., xx, 1876, p. 222 : Sharp, Dytisc., p. 277 : Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 150.
Hab. Cochinchina, Cambodia, Saigon.

Genus **HYDROCANTHUS.**

Say, Trans. Amer. Phil., ii, 1825, p. 105 : Brullé, Hist. Nat. Ins. Col., ii, p. 210 : Lacord., Gen. Col., i, p. 419 : Mun. Cat., pt, p. 444 : Sharp, Dytisc., p. 279, 839; *id.*, Biol. Centr. Amer., Col., i (2), p. 7 : Leconte & Horn, Class. Col., p. 63.

indicus, Wehncke, Deutsche Ent. Zeits., xx. 1876. p. 223 : Sharp. Dytisc., p. 279 : Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 609 ; *id.*, Notes Leyden Mus., ix, p. 51.
Hab. Burma, Rangoon, Bhamo, Siam, Cochinchina, Sumatra.

VATELLINI;—Sharp, Dytisc., p. 282, 921.

Genus **DEROVATELLUS.**

Sharp, Dytisc., p. 286, 841.

orientalis, Wehncke, Deutsche Ent. Zeits., xxvii, 1883, p 149.
Hab. Borneo.

LACCOPHILINI :—Sharp, Dytisc., p. 286, 923 : Leconte & Horn, Class. Col., 1883, p. 63.

Genus **LACCOPHILUS.**

Leach, Zool. Misc., iii, 1817, p. 69 : Brullé, Hist. Nat. Ins. Col., ii, p. 211 : Lacord., Gen. Col., i, p. 420 : Mun. Cat., p. 444, pt : Sharp, Dytisc., p. 287, 841 ; *id.*, Biol, Centr. Amer., Col., i (2), p. 9.

assimilis, Régimbart, Notes Leyden Mus., v, 1883, p. 226.
Hab. Java, Sumatra.

Baerii, Régimbart, Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 353 ; *ib.*, Bull. p. lxxviii : Sharp, Dytisc., p. 819.
Hab. Philippines, Manilla.

basalis, Motschulsky, Etud. Ent., 1859, p. 45 : Sharp, Dytisc. p. 314.
Hab. Malacca.

chinensis, Boheman, Freg. Eug. Resa, Col., 1858, p. 21 : Sharp, Dytisc., p. 315.
Hab. China.

chloroticus, Règimbart, Notes Leyden Mus., ix, 1887, p. 267.
Hab. Andaman Islands.

Clarkii, Sharp, Dytisc., p. 313.
Hab. Australia, Philippines.

cognatus, Sharp, Dytisc., p. 316.
Hab. India.

decoratus, Boheman, Freg. Eug. Resa, Col., 1858, p. 21 : Sharp, Dytisc., p. 819.
Hab. Philippines, Manilla.

derasus, Sharp, Dytisc., p. 311.
Hab. Siam, Bangkok.

difficilis, Sharp, Trans. Ent. S. Lond., 1873, p. 53; Dytisc., p. 301.
Hab. China, Japan.

dispersus, Sharp, Dytisc., p. 312.
Hab. Siam, Bangkok.

elegans, Sharp, Dytisc., p. 302.
Hab. Andaman Islands [*Ind. Mus.*, Andamans].

ellipticus, Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 152.
Hab. Cochinchina, Annam.

flavescens, Motschulsky, Et. Ent., 1859, p. 45 : Sharp, Dytisc., p. 820.
Hab. Ceylon.

flexuosus, Aubé, Dejean Spec. vi, 1838, p. 430.
? similis, Régimbart. Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 151.
Hab. India, Pondicherry.

hydaticoides, Régimbart, Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 359 ; *id.*, Bull., p. lxxix : Sharp, Dytisc., p. 820.
Hab. Philippines, Manilla.

inefficiens (*Hydroporus*), Walker, Ann. Mag. N. H., (3s.) iii, 1859, p. 51 : Sharp, Dytisc., p. 797.
Hab. Ceylon.

lituratus, Sharp, Dytisc., p. 313 : Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 150.
Hab. Siam, Mytho.

medialis, Sharp, Dytisc., p. 309.
Hab. Siam.

obtusus, Sharp, Dytisc., p. 311 : Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 151.
Hab. Singapur, Cochinchina, Annam, Saigon.

parvulus, Aubé, Dejean Spec, vi, 1838, p. 429 : Sharp, Dytisc., p. 312.
orientalis, Aubé, *l. c.*, p. 431.
? solutus. Sharp, *q. v.*
Hab. India, Bombay, Sumatra, Saigon.

pellucidus, Régimbart. Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 610.
Hab. Burma, Bhamo, Tenasserim.

ponticus, Sharp, Dytisc., p. 311.
Hab. Mesopotamia, Philippines.

posticus, Aubé, Dejean Spec., vi, 1838, p. 428 : Sharp, Dytisc., p. 309.
Hab. Madagascar, Mauritius,? Philippines.

proteus, Règimbart, Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 358 ; *ib*, Bull., p. lxxix : Sharp, Dytisc., p. 821.
Hab. Philippines, Manilla.

pulicarius, Sharp, Dytisc., p. 313.
Hab. Siam, Bangkok.

Ritsemae, Régimbart, Notes Leyden Mus., ii, 1880, p. 209 ; Midden Sumatra, iv, p 6, t. 1, f. 1.
Hab. Sumatra, Moeara Laboe.

rufulus, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 611.
Hab. Burma, Teintso, Rangoon.

Sharpii, Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 151.
flexuosus, Sharp, Dytisc., p. 310 (*nec* Aubé).
Hab. Asia, Persia, Mesopotamia, N. India, China, Japan.

Siamensis, Sharp, Dytisc., p. 306.
Hab. Siam.

solutus, Sharp, Dytisc., p. 315 : Régimb., Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 611.
?=parvulus, Aubé, *q. v.*
Hab. China, Burma, Bhamo.

transversalis, Régimbart, Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 357 ; *ib*. Bull., p. lxxix : Sharp, Dytisc., p. 822.
Hab. Manilla.

transversus, Motschulsky, Et. Ent., 1854, p. 45 : Sharp, Dytisc., p. 822.
Hab. Burma.

undulifer, Motschulsky, Et. Ent., 1859, p. 44 : Sharp, Dytisc., p. 312.
Hab. India, Tranquebar, Madras.

uniformis, Motschulsky, Et. Ent., 1859, p. 46 : Sharp, Dytisc., p. 822.
Hab. India.

Dytisci complicati, Sharp, Dytisc., p. 317.

HYDROPORINI:—Sharp, Dytisc., p. 319 : Leconte & Horn, Class. Col., 1883. p. 64.

HYDROVATINI, Sharp, Dytisc., p. 320.

Genus **HYDROVATUS**.

Motschulsky, Et. Ent., 1855, p. 82 : Ballion, Bull. Mosc., xlii, p. 219 : Mun. Cat., p. 429 : Sharp, Dytisc., p. 321, 848 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 14 ; Leconte & Horn, Class. Col., p. 64
Oxynoptilus, Schaum & Kiesenwetter, Naturg. Ins. Deutschl., i (2), 1867, p. 22 : Mun. Cat., p. 442.

minatus, Motschulsky, Et. Ent., 1859, p. 42 : Sharp, Dytisc., p. 326 : Régimb., ac Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 611.
, Clark, Trans. Ent. S. Lond., (3s.) i, 1863, p. 424.

badiu, *malaccæ*, Clark, *l.c.*, p. 425.
Hab. Rangoon, Malacca, Malaya, Sumatra, Celebes, Lombok, Danes Island, H Formosa, Philippines.

acutus, Sharp, Dytisc., p. 330 : Régimb., Ann. Mus. Civ. Gen,, (2s.) vi, 1888, p. 612 ; *id.*, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 152.
Hab. Burma, Rangoon, Annam, Cochinchina, Sumatra, Celebes.

Aristidis, Lep., Bull. Soc. Ent. Fr., (5s.) ix, 1879, p. lxxxii : Sharp, Dytisc., p. 325.
Hab. Kiukiang in Yangtse Valley, Formosa, Sumatra, Celebes, Lombok.

atricolor, Régimbart, Notes Leyden Mus., ii,. 1880, p. 209 ; Midden Sumatra, iv, 6, t. 1, f. 5 ; *id.*, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 452.
var. *politus*, Sharp, Dytisc., p. 332. Australia.
Hab. Cochinchina, Cambodia, Sumatra, Australia.

Bonvouloirii, Sharp, Dytisc., p. 335.
Hab. N. India.

carbonarius (*Hydroporus*), Clark, Trans. Ent. S. Lon., (3s.) i, 1863, p. 423 : Sharp' Dytisc., p. 790.
Hab. China, ? Java.

castaneus, Motschulsky, Et. Ent., 1855, p. 82 : Sharp, Dytisc., p. 334 : Régimb., Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 613.
Hab. India, Rangoon, Celebes.

confertus, Sharp, Dytisc., p. 329.
Hab. Siam.

consanguineus, Régimbart, Notes Leyden Mus. ii, 1880, p. 212 ; Midden Sumatra, iv, 6, t. i, f. 6.
Hab. Sumatra.

ferrugatus (*Oxynoptilus*), Régimbart, Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 36 ; *ib.*, Bull., *l.c.*, p. lxxix ; *id.*, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 612 : Sharp, Dytisc., p. 814.
elevatus, Sharp, Dytisc., p. 328.
Hab. Burma, Indo-China, Sumatra, Java, Celebes, Philippines.

fractus, Sharp, Dytisc., p. 330.
Hab. Siam.

fulvescens, Motschulsky, Et. Ent., viii, 1859, p. 43 : Sharp, Dytisc., p. 326 : Régimb., Ann. Mus. Civ. Gen., (2s.) vi, 1888. p. 611.
Hab. India ; Burma, Rangoon.

fusculus, Sharp, Dytisc., p. 326.
Hab. China, Formosa, Macassar.

laccophiloides, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 612.
Hab. Burma, Bhamo.

maculatus, Sharp, Dytisc., p. 332, 973.
?=maculatus, Motsch., Et. Ent., 1859, p. 42 : Sharp, Dytisc., p. 814, 973.
Hab. N. India, Mesopotamia.

nigrita, Sharp, Dytisc., p. 333.
Hab. Philippines, Australia

obscurus, Motschulsky, Et. Ent., 1859, p. 43 : Sharp, Dytisc., p. 815.
Hab. Ceylon.

obtusus, Motschulsky, *l.c. supra*, 1855, p. 82 : Sharp, Dytisc., p. 331.
Hab. India.

orientalis (*Hydroporus*), Clark, Trans. Ent. S. Lon., (3s.) i, 1863, p. 427 : Sharp, Dytisc., p. 805, 973.
Hab. China, Danes Island, Siam.

picipennis, Motschulsky, Et. Ent., 1859. p. 40 : Sharp, Dytisc., p. 334.
Hab. Ceylon, Siam, Bangkok.

pudicus (*Hydroporus*), Clark, Trans. Ent. S. Lon., (3s.) i, 1863, p. 426 : Sharp, Dytisc., p. 807.
Hab. Java.

pumilus, Sharp, Dytisc., p. 331.
Hab. India, Sumatra.

punctipennis, Motschulsky, Et. Ent., 1859, p. 41 : Sharp, Dytisc., p. 815.
Hab. India.

pusillus, Régimbart, Ann. Mus. Civ. Gen., xvi, 1881, p. 620.
Hab. India, Sumatra, Philippines.

rufescens, Motschulsky, Et. Ent., 1859, p. 41 : Sharp, Dytisc., p. 815.
Hab. India.

rufoniger (*Hyphidrus*), Clark, Trans. Ent. S. Lon., (3s.) i, 1863, p. 423 : Sharp, Dytisc., p. 334.
Hab. China, Siam, Java.

seminarius, Motschulsky, Et. Ent., 1859, p. 41 : Sharp, Dytisc., 815.
Hab. India.

subrotundatus, Motschulsky, Et. Ent., 1859, p. 41 : Sharp, Dytisc., p. 815.
Hab. India.

subtilis, Sharp, Dytisc., p. 329.
Hab. Celebes, Sumatra.

sumatrensis, Sharp, Dytisc., p. 327.
Hab. Sumatra.

tinctus, Sharp, Dytisc., p. 328.
Hab. Siam.

BIDESSINI, Sharp, Dytisc., p. 336, 925.

Genus **BIDESSUS**.

Sharp, Dytisc., p. 344, 852 ; *id.*, Biol. Centr. Amer., Col. i (2), p. 19 : Leconte & Horn, Class. Col., p. 64.
Anodocheilus, Babington, Trans. Ent. S. Lond., iii, 1838, p. 15.
Hydroglyphus, Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 108.

annamita, Régimbart, Ann. Soc. Ent. Fr., (6 s.) ix., 1889, p. 153.
Hab. Annam.

atomus (*Hydroporus*), Régimbart, *l.c.* Bull., (5 s.) vii, 1877, p. lxxx ; *ib.*, Ann., *l.c.* p. 361 : Sharp, Dytisc., p. 788.
Hab. Philippines, Manilla.

circulatus, Régimbart, *l.c.*, Ann., (6 s.) ix, 1889, p. 154.
Hab. Cochinchina.

dilutus, Sharp, Dytisc., p. 364.
Hab. Siam.

flammulatus, Sharp, Dytisc., p. 359.
Hab. China, Kiukiang.

flaviculus (*Hydroglyphus*), Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 108 : Sharp, Dytisc., p. 786 : (*gen dub*).
Hab. Ceylon.

fuscipennis, Sharp, Dytisc., p. 359.
Hab. Siam.

Gestroi, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 613.
Hab. Burma, Rangoon.

intermixtus (*Hydroporus*), Walker, Ann. Mag. N. H., (3 s.) ii, 1858, p. 204 : Sharp, Dytisc., p. 358.
Hab. Ceylon, Sumatra.

japonicus, Sharp, Trans. Ent. S. Lond., 1873, p. 54 : Sharp, Dytisc., p. 357.
Hab. Japan, China, Kiukiang in Yangtse Valley.

laeticulus, Sharp, Dytisc., p. 354.
Hab. Siam, Celebes.

nicobaricus (*Hydroporus*), Redtenbacher, Reise Novara, Col., 1867, p. 21 : Sharp, Dytisc., p. 802.
Hab. Nicobar Islands.

noteroides, Régimbart, Notes Leyden Mus., v, 1883, p. 227.
Hab. Java.

orientalis, Sharp, Dytisc., p. 358, 973.
Hab. Siam.

perforatus, Sharp, Dytisc., p. 363.
Hab. China, Kiukiang.

pseudogeminus (*Hydroporus*), Régimbart, Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 360 : *ib*, Bull., p. lxxix : Sharp, Dytisc. p. 807.
Hab. Manilla.

transversus, Sharp, Dytisc., p. 358.
Hab. Siam, Philippines.

HYPHYDRINI :—Sharp, Dytisc., p. 370, 927.

Genus **HYPHYDRUS**.

Illiger, Mag. Ent., i, 1802, p. 299 : Brullé, Hist. Nat. Ins. Col., ii, p. 206 : Lacord., Gen. Col., i, p. 414 : Jacq. Duval, Gen. Col. Eur., i, p. 71 : Mun. Cat., p. 428, pt : Sharp, Dytisc., p. 374, 857.

? *Pachytes*, Montrouzier, Ann. Soc. Ent. Fr., (3s.) viii, 1860, p. 244 : Mun. Cat., p. 429.

birmanicus, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 614.
Hab. Burma, Bhamo.

indicus, Sharp, Dytisc., p. 382.
Hab. India.

lyratus, Swartz, Schönherr's Syn. Ins., ii, 1808, p. 29, t. 4, f. *a*, *b* : Aubé, Dejean Spec., vi, p. 463 : Sharp, Dytisc., p. 383 : Régimbart, Ann. Mus. Civ. Gen., (2s) vi, 1888, p. 614 ; *id.*, Ann. Soc. Ent. Ent. Fr., (6 s.) ix, 1889, p. 152.
bisulcatus, Clark, Trans. Ent. S. Lond., (3s.) i, 1863, p. 422. Malacca.
fossulipennis, W. MacLeay, Trans. Ent. Soc. N. S. Wales, ii, 1871, p. 122, ♀. Gayndah.
var. *nigronotatus*, Clark, *l c. supra*, p. 421.
Hab. Burma, Bhamo, Annam, Malacca, Penang, Formosa, New Guinea, Australia.

orientalis, Clark, Trans. Ent. S. Lond., (3s.) i, 1863, p. 419 : Sharp, Dytisc., p. 382.
var. *eximius*, Clark, *l. c. supra*, p. 421.
,, *pulchellus* Clark, *l. c. supra*, p. 420.
Hab. China, Formosa, Amoy, Kiukiang.

rufus (*Hyphidrus*), Clark, *l. c. supra*, p. 423 : (*Hyphoporus*) Sharp, Dytisc., p. 818 : (*Hyphydrus*) Régimbart, Ann. Soc. Ent. Fr., (6 s.) ix, 1889, p. 152.
Hab. China, Annam.

sumatrae, Régimbart, Notes Leyden Mus., ii, 1880, p. 211 : Midden Sumatra, iv 6, t. i, p. 4.
Hab. Sumatra.

xanthomelas, Régimbart, Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 361 ; *ib.*, Bull., *l. c.* p. lxxx : Sharp, Dytisc., p. 383.
Hab. Philippines, Manilla.

HYDROPORINI:— Sharp, Dytisc., p. 381, 928.

Genus **HYPHOPORUS**.

Sharp, Dytisc., p. 390, 859.

aper, Sharp, Dytisc., p. 390.
Hab. N. India.

elegans, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 615.
Hab. Burma, Bhamo.

elevatus, Sharp, Dytisc., p. 390.
Hab. N. India.

interpulsus (*Hydroporus*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 204 : Sharp, Dytisc., p. 799.
Hab. Ceylon.

Solierii (*Hydroporus*), Aubé, Dejean Spec., vi, 1838, p. 554 : Sharp, Dytisc., p. 391, t. 12, f. 142.
Hab. Egypt, Arabia, Persia, N. India.

Genus **COELAMBUS**.

Thomson, Skand. Col., ii, 1860, p. 13 : Sharp, Dytisc., p. 394, 861, ; *id.*, Biol. Centr. Amer. Col., i (2), p. 26.

chinensis, Sharp, Dytisc., p. 398.
Hab. China, Kiukiang on Yangtse.

discedens, Sharp, Dytisc., p. 396.
Hab. China, Kiukiang.

Genus **DERONECTES.**

Sharp, Dytisc., p. 418, 865 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 26 : Leconte & Horn, Class. Col., p. 64.

griseostriatus *(Dytiscus)*, Degeer, Ins., iv, 1774, p. 103 : Sturm, Ins., ix, p. 21, t. 204, f. *a*. A. : Aubé, Dejean Spec., vi, p. 541 : Sharp, Dytisc., p. 434.

catascopium (Hydroporus), Say, Trans. Am. Phil. S. Philad., ii, 1825, p. 103.

interruptus (Hydroporus), Say, *l.c.*, iv, 1834, p. 445.

parallelus (*Hydroporus*), Say, Journ. Ac. N. S. Philad., iii, 1832, p. 153.

halensis (*Dytiscus*), Paykull, Faun. Suec., i, 1798, p. 230.

quadristriatus (*Hyphidrus*), Eschscholtz, Mém. Mosc., vi, 1823, p. 107.

? var. *Piochardii*, Régimb., Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 350 : Sharp, Dytisc., p. 806.

Hab. Alps, Pyrenees, W. Europe, Arctic Asia, Pankong Valley, N. W. Himálaya : W. America, Lake Superior [*Ind. Mus.*, Pankong Valley].

indicus, Sharp, Dytisc., p. 431.

Hab. N. India.

Genus **HYDROPORUS.**

Clairville, Ent. Helv., ii, 1806, p. 182 : Aubé, Dejean Spec., vi, p. 468 : Lacord., Gen. Col., i, p. 415 : Mun. Cat., p. 429, pt : Sharp, Dytisc., p. 435, 868 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 28 : Leconte & Horn, Class. Col., p. 64.

Graptodytes, Seidlitz, Bestimm. tab. Dytisc., in Verh. Ver. Brunn, xxv, 1887, p. 57.

Oreodytes, Seidlitz, *l. c.*, p. 57.

Yola, Gozis, Récherche, i, 1886, p. 8.

Also perhaps includes *Bidessus* and *Deronectes*, Sharp as subgenera.

aberrans, Clark, Trans. Ent. S. Lond., (3s.) i, 1863, p. 426 : Sharp, Dytisc., p. 786 (*gen dub.*).

Hab. Java.

quadricostatus, Aubé, Dejean Spec., vi, 1838, p. 487. (*gen. dub.*).

Hab. Bombay.

COLYMBETINI, Sharp, Dytisc., p. 490 : Leconte & Horn, Class. Col., 1883, p. 65.

Agabini, Sharp, Dytisc., p. 491, 931.

Genus **AGABUS.**

Leach, Zool. Misc., iii, 1817, p. 69, 72 : Lacord., Gen. Col., i, p. 424 : Jacq. Duval, Gen. Col. Eur., i, p. 73 : Mun. Cat., p. 452 : Sharp, Dytisc, p. 493, 876 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 32 : Leconte & Horn, Class. Col., p. 65.

Acatodes, Thomson, Skand. Col., i, p. 13, 1859 ; ii, p. 53, 1860.

Anisomera, Brullé, Hist. Nat. Ins., v. 1835, p. 205 : Lacord., Gen. Col., i, p. 421.

Arctodytes, Thomson, Opusc. Ent., vi, 1874, p. 541.

Dichodytes, Thomson, Bull. Soc. Ent. Fr., (6s.) vi, 1886, p. x.

Eriglenus, Thomson, Skand. Col., i, 1859, p. 14 ; ii, p. 55.

Gaurodytes, Thomson, *l. c.* i, p. 14 ; ii, p. 57 : Hult, Ent. Tidskr., 1886, p. 90, 125.

Heteronychus, Seidlitz, Verh. Verh. Brunn, xxv, 1887, p. 81.
Necticus, Hope, Col. Man., ii, 1838, p. 140.
Scytodytes, Seidlitz. *l.c. supra*, p. 81.
Xanthodytes, Seidlitz, *l.c.* p. 81.

biguttatus *(Dytiscus)*, Olivier, Ent., iii, 40, 1795, p. 26, t. 4, f. 26 : Aubé, Dejean Spec., vi. p. 341 ; Crotch, Col. Hefte, ix-x, p. 205 : Sharp, Dytisc., p. 499.
fontinalis, Stephens, Ill. Brit. Ent., ii, 1828, p. 66.
melas, Aubé, Ic. Col., v, 1838, p. 168, t. 20, f. 5.
nitidus, Fabr., Syst. Eleuth., i, 1801, p. 265 : Kiesenwetter, Nat. Ins., i (2), 1868, p. 106 : Régimb., Ann. Soc. Ent. Fr., (5s.) vii, p. 348.
silesiacus, Letzn., Jahrb. Schles. Ges., 1843, p. 4.
? consanguineus, Wollaston, Cat. Canar. Col., 1864, p. 81.
var. *nigricollis*, Zubkoff, Bull. Mosc., vi, 1833, p. 17 : Aubé, Dejean, Spec., vi, p, 335 : Régimb., Ann. Soc. Ent. Fr., (5s.) vii, p. 348.
Hab. Middle & S. Europe, Britain, N. Africa, W. Asia, [*Ind. Mus.*, Leh, Dras, Kargil].

Brandtii, Harold, M. T. Münch. Ent. Ver., iv, 1880, p. 148.
Hab. China, Pekin, ? Canton.

* **dichrous**, Sharp, Jl. As. Soc. Beng., xlvii (2), 1878, p. 169, ♂
Hab. Pamir [*Ind. Mus.*, type].

Genus **PLATYNECTES**.

Régimbart, Ann. Soc. Ent. Fr., (5s.) viii, 1878, p. 454, 462 : Sharp, Dytisc., p. 538, 887.

decempunctatus *(Dytiscus)*, Fabricius, Syst. Ent., 1775, p. 232 ; Spec. Ins., i, p. 294 ; Mant. Ins., i, p. 190 ; Ent. Syst., i, p. 191 ; Syst. Eleuth., i, p. 263 : Sharp, Dytisc., p. 540, t. 14, f. 175.
Mastersii, W. MacLeay, Trans. Ent. S. N. S. Wales, ii, 1871, p. 126.
spilopterus, Germar, Linn. Ent., iii, 1848, p. 172.
? var. *lugubris*, Blanchard, Voy. Pole Sud., iv, 1853, p. 49, t. 4, f. 4 : Sharp, Dytisc., p. 754.
Hab. Java, Philippines, Ternate, New Guinea, Tasmania, Australia.

dissimilis (*Agabus*), Sharp, Trans. Ent. S. Lond, 1873, p. 50 ; Dytisc., p. 543.
Hab. Japan, China, N. India.

lineatus (*Colymbetes*), Redtenbacher, Hügel's Kaschm., iv (2), 1844, p. 503, t. 23, f. 5 : Sharp, Dytisc., p. 762.
Hab. India.

octodecimmaculatus *(Colymbetes)*, MacLeay, Annul. Javan., 1825, p. 31 : Sharp, Dytisc., p. 763.
Hab. Java.

princeps, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 615.
Hab. Kakhien Hills, Tenasserim, Plapu.

procerus, Régimbart, Notes Leyden Mus., v, 1883, p. 229.
Hab. Java.

COPELATINI :—

Genus **COPELATUS.**

Erichson, Gen. Dytic., 1832. p. 38 : Aubé, Dejean Spec., vi, p. 365 : Lacord., Gen, Col., i, p. 425 : Mun. Cat., p. 457 : Sharp, Dytisc., p. 526, 892, 933 ; *id.*, Biol. Centr. Amer., Col., i (2) p. 34 : Leconte & Horn, Class. Col , p. 65.

Liopterus, Aubé, Dejean Spec., vi, 1838, p. 289 : Mun. Cat., p. 452.

andamanicus, Régimbart,

Hab. Andaman Islands, [*Ind. Mus.*, Andamans].

Doriae, Sharp, Dytisc., p. 578.

Hab. Borneo, Sarawak.

Feae, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 616.

Hab. Burma, Shwego-myo, Bhamo.

filiformis, Sharp, Dytisc., p. 563.

Hab. Himálaya.

geniculatus, Sharp, Dytisc., p. 581.

Hab. Malay Archipelago.

indicus, Sharp, Dytisc., p. 582.

Hab. India.

javanus, Règimbart, Notes Leyden Mus. v, 1883, p. 230.

Hab. Java.

latipes, Sharp, Dytisc., p. 580.

Hab. Malacca.

oblitus, Sharp, Dytisc., p. 582.

Hab. Singapur.

quadrisignatus, Régimbart, Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 356 ; *ib.*, Bull., p, lxxviii : Sharp, Dytisc., p. 769.

Hab. Philippines, Manilla.

Regimbartii, van d. Branden, Cat. Col. Carn. Aquat., 1885, p. 86.

fragilis, Régimbart, Notes, Leyden Mus., v, 1883, p. 232 (*nec* Sharp).

Hab. Java.

tenebrosus, Règimbart, *l.c.*, ii, 1880, p. 210 ; *ib.*, viii, 1886, p. 240 ; Midden Sumatra, iv, 6, t. 1, f. 3 ; *id.*, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 154.

pusillus, Sharp, Dytisc., p. 580.

Hab. Malacca, Siam, Saigon, Sumatra, Rawas ; Java.

LACCONECTINI :—

Genus **LACCONECTES.**

Motschulsky, Et. Ent., 1855, p. 83 : Mun. Cat., p. 446 : Sharp, Dytisc., p. 598, 894, 933.

basalis, Sharp, Dytisc., p. 598, t. 16, f. 190 : Régimb., Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 616.

Hab. Siam, Cambodia ; Burma, Teintso, Shenmaga, Palon.

fulvescens, Motschulsky, Et. Ent., 1855, p. 83 : Sharp, Dytisc., p. 598 : Régimb., Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 616.

Hab. India, Burma, Palon, Tennaserim.

Ritsemae, Régimbart, Notes Leyden. Mus., v, 1883, p. 229.
Hab. Java.

COLYMBETINI :—Sharp, Dytisc., p. 605, 934.

Genus **RHANTUS.**

Boisd. & Lacord, Faun. Ent. Par., i, 1835, p. 309 : Mun. Cat., p. 448 : Sharp, Dytisc., p. 607, 899 ; *id.*, Biol. Centr. Amer., Col., i. (2), p. 42 ; Leconte & Horn, Class. Col., p. 66.
Rantus, Eschscholtz, Dejean Cat. 3 *ed*, p. 61 (*ined*).

interclusus *(Colymbetes)*, Walker, Ann. Mag. N. H., (3s.) ii, 1859, p. 204 : Sharp, Dytisc., p. 762.
Hab. Ceylon.

punctatus *(Dytiscus)*, Fourcroy, Ent. Paris., i, 1785, p. 70.
australis (Colymbetes), Aubé, Dejean Spec., vi, 1838, p. 236.
conspersus (*Dytiscus*), Gyllenhal, Ins. Suec., i, 1808, p. 482 : Aubé, *l. c.*, p. 237.
discicollis (*Colymbetes*), Aubé, *l. c. supra*, p. 250 : Sharp, Dytisc., p. 759.
? *Montrouzierii* (*Colymbetes*), Lucas, Ann. Soc. Ent. Fr., (3s.) viii, 1860, p. 243.
notatus, Lacordaire, Faun. Ent. Paris., i, 1835, p. 311.
pulverosus (*Colymbetes*), Stephens, Ill. Brit. Ent., ii. 1829, p. 69, t. 12, f. 2 : Sturm, Ins., viii, p. 78, t. 194 : Sharp, Dytisc., p. 609.
rufimanus, White, Voy. Erebus & Terror, Zool., xi, 1846, p. 6.
? *suturalis* (*Colymbetes*), MacLeay, Annul. Javan., 1825, p. 31 : Sharp, Dytisc., p. 766.
? *vibicicollis* (*Colymbetes*), Hochhuth, Chaud. Enum. Carab., 1846, p. 216 : Sharp, Dytisc., p. 766.
Hab. New Zealand, Tasmania, Australia, New Caledonia, Java, Assam, N. W. Himálaya, China, S. Japan, Mesopotamia, Egypt, Algeria, S. & Middle Europe [*Ind. Mus.* var. Kargil (Turkistan), N. Khasiya Hills, Sikkim, S. India.]

DYTISCINI :—Leconte & Horn, Class. Col., 1883, p. 66.
Hydaticini, Sharp, Dytisc., p. 647, 939.

Genus **PRODATICUS.**

Sharp, Dytisc., p. 648, 906.
pictus, Sharp, Dytisc., p. 648, t. 17, f. 206.
Hab. N. India, Persia, [*Ind. Mus.* Biluchistan.]

Genus **HYDATICUS.**

Leach, Zool. Misc., iii, 1817, p. 69 : Brullé, Hist. Nat. Ins. Col., ii, p. 217 : Lacord., Gen. Col., i. p. 431 : Jacq. Duval, Gen. Col. Eur., i, p. 75 : Mun. Cat., p., 464 : Sharp, Dytisc., p. 648, 907 ; *id.*, Biol. Centr. Amer., Col., i. (2), p. 43 : Leconte & Horn, Class. Col., p. 67.

agaboides, Sharp, Dytisc., p. 663.
Hab. Cochinchina.

aruspex, Clark, Trans. Ent. S. Lond., (3s.) ii, 1864, p. 212 : Sharp, Dytisc., p. 778.
Hab. China.

bihamatus, Aubé, Dejean Spec., vi, 1838, p. 174 : Sharp, Dytisc., p. 656, t. 17, f. 207 : Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 155.

discindens, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 204. Ceylon.

fractifer, Walker, *l. c.*, p. 204. Ceylon.

pacificus, Aubé, Dejean Spec., vi, 1838, p. 177. Timor.

trivittatus (*Colymbetes*), Montrouzier, Ann. Soc. Agric. Lyon, viii (i), p. 8 : Sharp, Dytisc., p. 766. Woodlark Island.

var. *batchianensis*, Sharp, Dytisc., p. 659. Batchian.

" { *Goryi*, Aubé, Dejean Spec., vi, 1838, p. 175 : Sharp, Dytisc., p. 656.
Banksii, Crotch, Col. Hefte, ix-x, 1872, p. 205. Malaya.
Clairvillei, Montrouzier, Ann. Soc. Ent. Fr., (3s.) viii, 1860, p. 242 : Sharp, Dytisc., p. 758.
ruficollis, Fabr., Mant. Ins., i, 1787, p. 189 ; *id.*, Ent. Syst., i, p. 189 ; Syst. Eleuth., i, p. 261 : Olivier, Ent., iii, 40, p. 15, t. 2, f. 10.
scriptus, Blanchard, Voy. Pole Sud., iv, 1853, p. 46, t. 4, f. 1. Australia.

var. *litigiosus*, Régimbart, Notes Leyden Mus., ii, 1880, p. 210 ; Midden Sumatra, iv, 6, t. 1, f. 2. Sumatra, Moeara Laboe.

" { *luczonicus*, Aubé, Dejean Spec., vi, 1838, p. 179 : Sharp, Dytisc., p. 657 : Régimbart, Ann., Soc. Ent. Fr., (6s.) ix, 1889, p. 154. Philippines.
moluccarum, Sharp, Dytisc., p. 656. Batchian.

Hab. India, Burma, Ceylon, Indo-China, Philippines, Eastern Archipelago, New Caledonia, Australia, Tasmania [*Ind. Mus.* Andamans].

Bowringii, Clark, Trans. Ent. S. Lond., (3s.) ii, 1864, p. 214, t. 14, f. 3 : Sharp, Dytisc., p. 670.

Hab. Japan, China, ? Australia.

concolor, Sharp, Dytisc., p. 661.

Hab. Cochinchina.

dineutoides, Sharp, Dytisc., p. 657.

Hab. Borneo.

Fabricii (*Colymbetes*), MacLeay, Annul. Javan., 1825, p. 31 : Sharp, Dytisc., p. 663 : Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 155.

rufulus, Aubé, Dejean Spec., vi, 1838, p. 199. Java.

? varius, Fabr., Ent. Syst., i, 1792, p. 195 ; Syst. Eleuth., i. p. 267 : Olivier, Ent., iii, 40, t. 2, f. 17.

Hab. India, Ceylon, Andamans, Malaya, Siam, Saigon, China, Borneo, Sumatra, Java, Celebes, Philippines [*Ind. Mus.*, Andamans, Berhampur.]

histrio, Clark, Trans. Ent. S. Lond., 1864, p. 221, t. 14, f. 5 : Sharp, Dytisc., p. 780.

Hab. N. India.

incertus, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 617.

Hab. Burma, Bhamo.

Leander, Rossi, Fauna Etrusc., i, 1790, p. 202 : ? Olivier, Ent., iii, 40, p. 22, t. 3, f. 25 : Aubé, Dejean, Spec., vi, p. 198 : Sharp, Trans. Ent. S. Lond., 1873, p. 49 ; *id.*, Dytisc., p. 662 : Régimb., Notes Leyden Mus., xi, 1889, p. 61.

? Nauzielii, Fairmaire, Bull. Soc. Ent. Fr., 1859, p. lii : Sharp, Dytisc., p. 780.

var. ? *confusus*, Boheman, Freg. Eug. Resa, Col., 1858, p. 21.

" *fusciventris*, Reiche, Ann. Soc. Ent. Fr., 1855, p. 369.

Hab. S. Europe, N. Africa, Palestine, Madagascar, Philippines.

philippinensis, Wehncke, Stettin. Ent. Zeit., xxxvii, 1876, p. 197 : Sharp, Dytisc., p. 782 : Régimbart, Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 356.
duplex, Sharp, Dytisc., p. 669. Borneo.
Leveillei, Régimbart, Bull. Soc. Ent. Fr., (5s.) vii, 1877, p. lxxviii.
Hab. Borneo, Philippines, Manilla.

rectangulus, Sharp, Dytisc., 669.
Hab. Persia, N. India, Kulu, Kangra [*Ind Mus.*, Biluchistan].

rhantoides, Sharp, Dytisc., p. 664.
Hab. Formosa, Japan, Manchuria.

sesquivittatus, Fairmaire, Le Nat., ii, 1880, p. 164.
Hab. Middle China.

vittatus (*Dytiscus*), Fabr., Syst. Ent., App., 1775, p. 825 ; *id.*, Spec. Ins. i, p. 293, Mant. Ins., i, p. 190 ; Ent. Syst., i, p. 190 ; Syst. Eleuth., i, p. 262 ; Olivier, Ent., iii (40), p. 20, t. 1, f. 5 : Gmelin, *ed.* Syst. Nat., p. 1946 : Aubé, Dejean, Spec., vi, p. 208 : Sharp, Dytisc., p. 670 : Régimb., Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 618.
quadrivittatus, Blanchard, Voy. Pole Sud, iv, 1853, p. 48, t. 4, f. 3.
var. *bipunctatus*, Wehncke, Stettin Ent. Zeit., xxxvii, 1876, p. 196.
Hab. Japan, Manchuria, China, Formosa, Philippines, Siam, Burma, Malacca, India, Ceylon, Saigon, Borneo, Java, Sumatra, Celebes, Batchian, Menado, Australia [*Ind. Mus.*, Assam, Sibságar, Berhampur, Utakamand, Madras].

THERMONECTINI :—Sharp, Dytisc., p. 672, 490.

Genus SANDRACOTTUS.

Sharp, Dytisc., p. 685, 910.

Baerii (*Hydaticus*), Régimbart, Bull. Soc. Ent. Fr., (5s.) vii, 1877, p. lxxvii ; *ib.*, Ann., p. 355 : Sharp, Dytisc., p. 779.
Hab. Philippines, Manilla.

Dejeanii (*Hydaticus*), Aubé, Dejean Spec., vi, 1838, p. 165 : Sharp, Dytisc., p. 686.
?=fasciatus, Fabr., *q. v.*
Hab. India [*Ind. Mus.*, Burma, Sahibganj, Murshidabad.]

fasciatus (*Dytiscus*), Fabr., Syst. Ent. App., 1775, p. 825 ; Spec. Ins., i, p. 293 ; Mant. Ins., i, p. 190 ; Ent. Syst., i, p. 189 ; Syst. Eleuth., i, p. 261 : Olivier, Ent., iii, 40, p. 18, t. 2, f. 19 : Gmelin, *ed.* Syst., Nat., i (4) p. 1947 : Aubé, Dejean Spec., vi, p. 161 : Régimbart, Ann. Mus. Civ., Gen., (2 s.) vi, 1888, p. 618.
Hunterii, Crotch, Col. Hefte, ix-x, 1872, p. 205 : Sharp, Dytisc., p. 683.
mixtus, Blanchard, Voy. Pole Sud, iv, 1853, p. 47, t. 4, f. 2, Timor.
var. *Chevrolatii*, Aubé, Dejean Spec., vi, 1838, p. 164 : Sharp, Dytisc., p 686, t. 18, f. 214.
Hab. E. and S. Asia, India, Burma, Ceylon, Timor [*Ind. Mus.*, Sikkim].

festivus (*Dytiscus*), Illiger, Mag. Ins., i, 1802, p. 166 : Aubé, Dejean Spec., vi, p. 162: Sharp, Dytisc., p. 686.
Hab. China, India, Ceylon [*Ind. Mus.*, Ceylon].

insignis, Wehncke, Stettin Ent. Zeit., xxxvii, 1876, p. 194 : Sharp, Dytisc., p. 687.
Hab. Philippines.

maculatus, Wehncke, Stettin. Ent. Zeit., 1876, p. 196 : Sharp, Dytisc., p. 690.
Hab. Malayan Peninsula.

nauticus, Sharp, Dytisc, p. 690.
Hab. Borneo.

ornatus, Sharp, *l. c.* p. 689.
Hab. Borneo.

Genus **RHANTATICUS**.

Sharp, Dytisc., p. 691, 911.

signatipennis (*Hydaticus*), Lap. de Casteln., Et. Ent., 1834, p. 95 : Aubé, Dejean Spec., vi, p. 158 : Sharp, Dytisc., p. 691, t. 18, f. 215 : Régimb., Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 618.
? *congestus*, Klug, Ins. Madag., 1833, p. 136 : Sharp, Dytisc., p. 691, t. 18, f. 215 (*teste*, Kolbe, Fauvel). Madagascar.
Rochasii, Montrouzier, Ann. Soc. Linn. Lyon, 1864, p. 81.
Hab. Australia, New Caledonia, Formosa, China, Philippines, Siam, Burma, Bhamo, India, Arabia, Madagascar, Cape, Cape Verde, Ngami, Senegal, [*Ind. Mus.*, Berhampur, Bengal].

ERETINI :—

Genus **ERETES**.

Lap. de Casteln., Ann. Soc. Ent. Fr., i, 1832, p. 397 : Sharp, Dytisc., p. 699, 913 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 46 : Leconte & Horn, Class. Col., p. 67.
Eunectes, Erichson, Gen. Dytic., 1832, p. 23 : Aubé, Dejean Spec., vi, p. 123 : Brullé, Hist. Nat. Ins. Col., ii, p. 221 : Klug, Symb. Phys, t. 33 : Lacord., Gen. Col., i, p. 429 : Jacq. Duval, Gen. Col. Eur., i, p. 76, Mun. Cat., p. 462.

sticticus (*Dytiscus*), Linn., Syst. Nat., 12 ed., 1767, p. 666 : Fabr., Syst. Ent., p. 232 ; Spec. Ins., i, p. 294 ; Mant. Ins., 1, p. 190 ; Ent. Syst., i, p, 191 ; Syst. Eleuth., i, p. 263 : Olivier, Ent., iii, 40, p. 21, t. 2, f. 11 : Klug, Symb. Phys., t. 33, f. 2 : Jacq. Duval, Gen. Col., 1857, t. 28, f. 136 : Sharp, Dytisc., p. 699 : (larva) Mayet, Bull. Soc. Ent. Fr., (6s.) vii, 1887, p. cciii : Sharp, Biol. Centr. Amer., Col., i (2), p. 46.
conicollis, Wollaston, Ann. Mag. N. H., (3s.) viii, 1861. p. 97. Isl. St. Vincent.
griseus, Fabr., Spec. Ins., i, p. 293 ; Mant. Ins., i, p. 190 ; Ent. Syst., i, 1792, p. 192 ; Syst. Eleuth. i, p. 263 : Olivier, Ent., iii, 40, p. 20, t. 2, f. 12 : Gmelin, *ed.* Syst. Nat., p. 1947 : Aubé, Ic. Col., v, p. 74, t. 10, f. 1. India.
helvolus, Klug, Symb. Phys., 1834, t. 33, f. 3 : Wollaston, Trans. Ent. S. Lond., 1871, p. 222. Ambukohl, Madeira.
occidentalis, Erichson, Wiegm. Arch., 1847 (1), p, 73. Peru.
plicipennis, Motschulsky, Bull. Mosc., xviii (1), 1845, p. 29 ; *ib.*, xxii (3), 1849, p. 77. Astrabad.
punctatus, Zoubkoff, *l.c.*, x (5), 1837, p. 66, t. 4, f. 1. Turcomania.
punctipennis, MacLeay, Trans. Ent. S. N. S. Wales, iii, 1871, p. 127. Gayndah.
subcoriaceus, Wollaston, Ann. Mag. N. H., (3s.) viii, 1861, p. 99. Madeira.
subdiaphanus, Wollaston, *l.c.*, p. 100. Canary Islands.
succinctus, Klug, Symb. Phys., 1834, t 33, f. 4. Egypt.

Hab. Europe, Africa, Egypt, N. & S. Asia, India, Singapur, Hué, Philippines, Eastern Archipelago, United States, Mexico, Peru, Guadeloupe, Galapagos [*Ind. Mus.*, Madras, Berhampur].

CYBISTRINI :—Sharp, Dytisc., p. 700, 941 : Leconte & Horn, Class. Col., 1883, p. 67.

Genus **CYBISTER**.

Curtis, Brit. Ent., iv, 1827, p. 151 : Brullé, Hist. Nat. Ins. Col., ii, p. 222 : Lacord., Gen. Col., i, p. 427 : Jacq. Duval, Gen. Col. Eur., i, p. 78 : Rye, Ent. Ann., 1872, p. 24 ; Sharp, Dytisc., p. 714, 918 ; *id.*, Biol, Centr. Amer., Col., i (2), p. 47.
Trogus, Leach, Zool. Misc., iii, 1817, p. 70 : Mun. Cat., p. 458 (*nom. praeoc.*)

bengalensis, Aubé, Dejean Spec., vi, 1838, p. 61 : Sharp, Dytisc., p. 741.
Hab. India, China, Szechuen.

chinensis, Motschulsky, Et. Ent., 1853, p. 44 : Sharp, Dytisc., p. 742.
Hab. China, Saigon [*Ind. Mus.*, Saigon].

cognatus, Sharp, Dytisc., p. 744.
Hab. Java.

convexus, Sharp, Dytisc., p. 718.
Hab. India [*Ind. Mus.*, Munipur Hills, N. Khasiya Hills].

crassus, Sharp, Dytisc., p. 743.
Hab. Assam, Silhat [*Ind. Mus.*, Sikkim].

De Haanii, Aubé, Dejean Spec. vi, 1838, p. 101 : Sharp, Dytisc., p. 726.
Hab. Cambodia, Siam, Borneo.

Dejeanii, Aubé, Dejean Spec., vi, 1838, p. 64 : Sharp, Dytisc., p. 771.
Hab. India, Malabar.

extenuans (*Dytiscus*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 204 : Sharp, Dytisc., p. 773.
? = Dejeanii, Aubé, *q. v.*

fumatus, Sharp, Dytisc., p. 731 : Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 155.
Hab. Malacca, Siam, Saigon.

gracilis, Sharp, Dytisc., p. 742.
Hab. India.

Guerinii, Aubé, Dejean Spec., vi, 1838, p. 57 : Sharp, Dytisc., p. 740.
Hab. Manchuria, China, Siam, Laos, Saigon, Java, Celebes.

japonicus, Sharp, Trans. Ent. S. Lond., 1873, p. 45 ; *id.*, Dytisc., p. 748, t. 18, f. 225.
Hab. Japan, China.

javanus, Aubé, Dejean Spec., vi, 1838, p. 59 : Sharp, Dytisc., p. 743.
Hab. India, Java.

Lewisianus, Sharp, Trans. Ent. S. Lond., 1873, p. 46 ; Dytisc., p. 732.
Hab. Japan, China, Assam.

limbatus (*Dytiscus*), Fabr. Syst. Ent., 1775, p. 230 ; Spec. Ins., i, p. 292 ; Mant. Ins., i. p. 189 ; Ent. Syst., i, p. 188 ; Syst. Eleuth., i, p. 258 : Gmelin, *ed.* Syst. Nat., i (4), p. 1946 : Aubé, Dejean Spec., vi, p. 55 : Sharp, Dytisc., p. 739, t. 18 f. 224 : Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 618.

aciculatus, Herbst, Füssly Arch., v, 1784, p. 123 : Olivier, Ent., iii (40), p. 13, t. 3, f. 30 : Gmelin, *ed.* Syst Nat., i (4), p. 1952.

var. *confusus*, Sharp, Dytisc., p. 739. India, Ceylon, China.

„ *? zeylanicus*, Gronovius, Mus., ii, 1778, p. 164, *n.* 552 : Gmelin, *ed.* Syst. Nat., i (4), p. 1954.

Hab. Manchuria, China, Formosa, Philippines, Burma, Kakhyen Hills, Prome, Saigon, S. India, Ceylon [*Ind. Mus.*, S. India, Utakamand, Murshidabad, Ceylon].

nigripes, Wehncke, Stettin Ent. Zeit., xxxvii, 1876, p. 359 : Sharp, Dytisc., p. 717.
Hab. Borneo.

pectoralis, Sharp, Dytisc., p. 736.
Hab. India.

posticus, Aubé, Dejean Spec. vi, 1838 p. 87 : Sharp, Dytisc., p. 718.
Hab. India [*Ind. Mus.*, Sibságar, Murshidabad, Berhampur].

prolixus, Sharp, Dytisc., p. 718.
Hab. Ceylon.

rugosus, MacLeay, Annul. Javan., 1825, p. 32 : Sharp, Dytisc., p. 745.
indicus, Aubé, Dejean Spec., vi, 1838, p. 62 : Régimbart, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 155.
Hab. India, Indo-China, Malay Archipelago.

rugulosus *(Trochalus)*, Redtenbacher, Hügel's Kaschm., iv (2), 1844, p. 502 : Sharp, Dytisc., p. 825.
Hab. N. India.

siamensis, Sharp, Dytisc., p. 717.
Hab. Siam, Andaman Islands.

sugillatus, Erichson, Nov. Act. Cæs. Leop., xvi, 1834, p. 227 : Sharp, Dytisc., p. 717.
bisignatus, Aubé, Dejean Spec., vi, 1838, p. 88. Malacca, India [Sibságar].
notasicus, Aubè, *l.c.* p. 90. Timor, Sumatra.
olivaceus, Boheman, Freg. Eug. Resa, Col., 1858, p. 21, Philippines.
Hab. China, Tibet, India, Malacca, Saigon, Sumatra, Timor, Philippines, [*Ind. Mus.*, Philippines, Sibságar].

sumatrensis, Régimbart, Notes, Leyden Mus., v, 1883, p. 233.
Hab. Sumatra.

tripunctatus, Olivier, Ent. iii, 40, 1795, p. 14, t. 3, f. 24 : Aubé, Dejean Spec., vi, p. 76 ; Gerst., Arch. f. Naturg., xxxvii, 1871, p. 244 : Sharp, Dytisc., p. 727 : Fauvel, Rev. d' Ent., ii, 1883, p. 345.
aegyptiacus, Peyron, Ann. Soc. Ent. Fr., (3s.) iv, 1856, p. 722. Madagascar.
? africanus, Lap. de Casteln., Et. Ent., 1834, p. 99 : Aube, Ic., v, p. 49, t. 3, f. 6 : Régimb., Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 347. Bourbon, Egypt.
gayndahensis, W. MacLeay, Trans. Ent. Soc. N. S. Wales, ii, 1871, p. 127. Malay Archipelago.
Gotschii, Hochhuth, Chaudoir, Enum. Carab., 1846, p. 214. Lenkoran.
Haagii, Wehncke, Stettin, Ent. Zeit., 1876, p. 358. Nubia.
lateralis, Fabr., Ent. Syst. Suppl., 1798, p. 64 ; Syst. Eleuth., i, p. 260 : Perch., Gen. Ins., 1835, ii, 2, t. 4. Mauritius.

meridionalis, Géné, Mém. Ac. Turin., 1836, p. 170, t. 1, f. 3. Sardinia.
var. *artensis*, Montrouzier, Ann. Soc. Ent. Fr., (3s.) viii, 1860, p. 241. Art Island.
„ *asiaticus*, Sharp, Dytisc., p. 731. India, Persia, Mesopotamia [*Ind. Mus.*, Dekhan].
„ *hamatus*, Montrouzier, Ann. Soc. Agric. Lyon, vii (1), 1857, p. 9. Woodlark Island.
„ *Novæ Caledoniæ*, Montrouzier, Ann. Fr., *l.c. supra*, p. 241, New Caledonia.
„ *Temnenkii*, Aubé, Dejean Spec., vi, 1838, p. 74. Java.
Hab. S. Europe, Africa, Madagascar, Bourbon, Mauritius, India, Ceylon, Saigon, Philippines, Java, New Guinea, New Caledonia, Oceania [*Ind. Mus.*, Andamans, Madras, Biluchistan, Calcutta, Rangoon, N. China].

ventralis, Sharp, Dytisc., p. 742.
Hab. Madras.

virens, Müller, Zool. Dan. Prodr., 1776, p. 170.
dispar, Rossi, Faun. Etrusc., i, 1790, p. 199. Italy.
dissimilis, Rossi, Mant., i, 1792, p. 66. Italy.
glaber, Bergstrasser, Nomencl., i, 1778, p. 59, t. 6, f. 4-5 ; t. 8, f. 4 ; t. 9, f. 2. Germany.
intricatus, Schaller, Schrift. Nat. Ges. Halle, i, 1783, p. 311, ♀. Sweden.
punctulatus, Schwarz, Nomencl., i, 1793, p. 34. Sweden.
Roeselii, Füssly, Verzeichn. Schw. Ins., 1775, p. 5 : Goeze, Ent. Beytr., i, 1777, Roesel, Ins., ii, Ins. Aquat., i, p. 617 :t. 2, f. 1-5 : Fabr., Ent. Syst., i, p. 188 ; Syst. Eleuth., i, p. 259 : Olivier, Ent., iii, 40, p. 13, t. 3, f. 21 *a. b.* : Sturm, Ins., viii, p. 62,65, t. 192 : Jacq. Duval, Gen. Col., t.28, f. 138 ♂ : Aubé, Dejean Spec., vi, p. 66 : Schiödte, Nat. Tidskr., 1864, p. 185, t. 7, f. 10-16 : Sharp, Dytisc.,p. 747 ; *id.*, Ent. Mon. Mag., xix, p. 260. France.
? tataricus, Gebler in Ledeb.'s Reise, ii, 1830, p. 64 ; *id.*, Bull. Mosc., (2), 1850, p. 450 : Sharp, Dytisc., p. 775. Tartary.
virescens, Linn., Gmelin, Syst. Nat., i (4), 1788, p. 1958.
var. *Chaudoirii*, Hochhuth, Chaud., Enum. Carab., 1846, p. 213. Lenkoran.
„ *lepidus*, Küster, Käfer Europas, i, 1844, p. 24. Dalmatia.
„ *? lusitanicus*, Sharp, Dytisc., p. 747. Portugal.
„ *politus*, Gautier, Rev. Zool., 1866, p. 179. Spain.
„ *? Jordanis*, Reiche, Ann. Soc. Ent. Fr., (3s.), iv, 1856, p. 637. Palestine.
Hab. Europe, N Africa, ? India [*Ind. Mus.*, Yarkand].

Wehnckianus, Sharp, Dytisc., p. 737.
Hab. ? India.

Family **GYRINIDÆ**.

Catalogue of the Insecta *of the Oriental Region* No. 5. *Order* Coleoptera, *Family* Gyrinidæ.—*By* E. T. Atkinson, B. A.

The species of this family are of an oval form, somewhat attenuated at either end : of a bluish black colour, shining. Their habits are aquatic, and from their movements on the surface of the water, they have obtained the common name of ' whirligigs.' The arrangement proposed by Dr. M. Régimbart in his '*Monograph of the Gyrinidæ*' is followed

in the present catalogue. He has divided the family into three tribes, *Enhydrini*, *Gyrinini*, and *Orechtochilini*, and describes the then known species. His prefaratory chapter notices the details of the structure and is illustrated by figures.

Regimbart, M :—

'Essai monographique de la famille des Gyrinides,' in Annales de la Societé entomologique de France, 6th series, ii, p. 379, 1882 : iii, p. 121, 381, 1883 : Supplement vi, p. 217, 1886. It will be convenient to cite the whole as '*Mon.*'

'Monographie du genres Enhydrus et Porrhorhynchus,' in same, (5s.) vii, 1877, p. 105.

'Gyrinides de Birmanie,' in Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 619.

Family **GYRINIDÆ.**

Leach, Edinb. Encycl., 1815; Brullé, Hist., Nat. Ins., ii, 1835, p. 226 : Jacq. Duv., Gen. Col., i, p. 79 : Lacord., Gen. Col., i, 1854, p. 433 : Leconte & Horn, Class. Col., 1883, p. 68 : Régimbart, *Monograph*, 1882, p. 379.

ENHYDRINI :—Régimbart, *Mon.*, 1882, p. 392.

Genus **DINEUTES.**

MacLeay, Annul. Javan., 1825, p. 30 : Aubé, Dejean Spec., vi, p. 761 : Brullé, Hist. Nat. Ins. Col., ii, p. 240 : Lacord., Gen. Col., i, p. 439 : Mun. Cat., p. 471 : Régimbart, *Mon.*, 1882, p. 394 : Sharp, Biol. Centr. Amer., Col., i (2), p. 49 : Leconte & Horn, Class. Col., p. 69.

Cyclinus, Kirby, Faun. Bor. Amer., iv, 1837, p. 78. :

australis (*Gyrinus*), Fabr. Syst. Ent., 1775, p. 235 ; Spec. Ins., i, p. 298 ; Mant. Ins., 1, p. 194 ; Ent. Syst., i, p. 203 ; Syst. Eleuth., i, p. 275 : Oliv., Ent., iii, 41, p. 12, t. 1, f. 4 : Aubé, Dejean Spec., vi, p. 785 : Schaum, Stettin. Ent. Zeit., 1847, p. 54 : Fauvel, Bull. Soc. Linn. Norm., i, 1867, t. i, f. 13 : Redtenb., Reise Novara, Col., p. 24 : Régimb., *Mon.*, 1882, p. 422, t. 12, f. 43, 43*a*.

? dentatus, Suffrian, Stettin. Ent. Zeit., 1842, p. 256. Australia.

leucopoda, Montrouzier, Ann. Soc. Ent. Fr., (3s.) viii, 1860, p. 245, ♀.

? limbatus, MacLeay, Annul. Javan., 1825, p. 30.

Hab. India, Malacca, Sunda Isles, Philippines, New Caledonia, Australia, New Zealand [*Ind. Mus.*, Hong-Kong].

ciliatus, Forsberg, Nov. Acta Upsal., viii, 1821, p. 312.
Hab. India.

fulgidus, Régimbart, Notes Leyden Mus., ii, 1880, p. 213 ; *id.*, *Mon.*, 1882, p. 398 : Midden Sumatra, iv, 6, t. i, f. 8.
Hab. Sumatra, Alahan Pandjang.

comma, Thunberg, Mus. Nat. Acad. Upsal., iv, 1787, p. 45.
Hab. India.

hastatus (*Gyrinus*), Fabricius, Syst. Eleuth., i, 1801, p. 275.
Hab. India.

indicus, Aubé, Dejean Spec. vi, 1838, p. 772 : Régimb., *Mon.*, 1882, p. 405.
Hab. India. [*Ind. Mus.* Assam, Berhampur, Vizagapatam, Biluchistan].

indus (*Gyrinus*), Fabricius, Ent. Syst. Suppt, 1798, p. 65 : Forsb., Nov. Acta Upsal., viii, p. 302 : Régimb., *Mon.*, 1882, p. 401, t. ii, f. 27, 27*a*.

praemorsus, Fabr., Syst. Eleuth., i, 1801, p. 275 : Aubé, Dejean Spec., vi, p. 765 : Brullé, Hist. Nat. Ins. Col., ii, p. 240, t. 10, f. 5.

Hab ? India, Mauritius, Bourbon, Mascarene Islands, New Caledonia.

marginatus, Sharp, Trans. Ent. S. Lond., 1873, p. 56 : Régimb., *Mon.*, 1882, p. 425, t. 12, f. 47, 47*a*.

quadrispinus, Fairmaire, Ann. Soc. Ent. Fr., (5s.) viii, 1878, p. 88.

Hab. Japan, Manchuria, China, India, New Guinea.

Mellyi, Régimbart, *Mon.*, 1882, p. 399.

Hab. China.

politus, MacLeay, Annul. Javan., 1825, p. 30 : Aubé, Dejean Spec., vi, p. 762 : Redtenb., Reise Novara, Col., p. 24 : Régimb., *Mon.*, p. 396, t. ii, f. 24.

? *Kollmanni*, Perty, Obs. Col. Ind., 1831, p. xxxii.

Hab. Java, Timor, Australia [*Ind. Mus.*, Java.].

sinuosipennis, Lap. de Casteln., Hist. Nat. Ins. Col., i, 1840, p. 171.

Hab. Tibet.

spinosus (*Gyrinus*), Fabr., Spec. Ins., 1781, p. 298 ; Mant. Ins., i, p 194 ; Ent. Syst., i, p. 203 ; Syst. Eleuth., i, p. 203 : Olivier, Ent., iii, 41, p. 13, t. 1, f. 7 : Gmelin, *ed.* Syst. Nat., p. 1612 : Aubé, Dejean Spec., vi, p. 789 : Régimb., *Mon.*, 1882, p. 425, t. 12, f. 48, 48*a* ; *id.*, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 619.

Hab. India, Coromandel, Burma, Bhamo, Teintso, Katha, Rangoon, Siam, Borneo [*Ind. Mus.*, Berhampur, Madras].

subspinosus (*Gyrinus*), Klug, Symb. Phys., iv, 1829, t. 34, f. 9 : Aubé, Dejean Spec., vi, p. 786 : Régimb., *Mon.*, 1882, p. 423, t. 12, f. 45.

? *dentipennis*, MacLeay, Annul. Javan., 1825, p. 30.

Hab. Senegal, Mauritius, Madagascar, Canaries, Nubia, Egypt, Palestine, Syria, India.

unidentatus, Aubé, Dejean Spec., vi, 1838, p. 788 : Régimb., *Mon.*, 1882, p. 424 ; *id.*, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 156.

Hab. India, Saigon, China [*Ind. Mus.*, Calcutta].

Genus **PORRORHYNCHUS**.

Lap. de Casteln., Et. Ent., 1834, p. 108 : Brullé, Hist. Nat. Ins. Col., ii, p. 239 : Lacord., Gen. Col., i, p. 440 : Mun. Cat., p, 473 : Régimbart, *Mon.*, 1882, p. 427.

indicans, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 205.

brevirostris, Régimbart, Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 113, t. 6, f. 5, ♂ ; *id.*, *Mon.*, 1882, p. 429, t. 12, f. 50 ; *ib.*, 1886, p. 250.

Hab. Ceylon, Java.

marginatus, Lap. de Casteln., Et. Ent., 1834, p. 108 : Aubé, Dejean Spec., vi, p. 759 : Brullé, Hist. Nat. Ins., ii, p. 239, t. 10, f. 4 : Lacord., Gen. Col. Atlas, t. 13, f. 4 : Régimb., *Mon.*, Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 110 t. 6, f. 3, ♂ ; *id.*, *l.c.*, 1882, p. 427, t. 12, f. 49, 49*a*.

var. *tenuirostris*, Régimb., Ann. Soc. Ent. Fr., (5s.) vii, 1877, p. 111, t. 6, f. 4, ♂ ; *id.*, *Mon.*, 1882, p. 428.

Hab. Java, Borneo, Cochinchina, Siam, [*Ind. Mus.* Tenasserim].

GYRININI:—Régimbart, *Mon.*, 1883, p. 124.

Genus AULONOGYRUS.

(Motschulsky), Régimbart, *Mon.*, 1883, p. 124.

obliquus *(Gyrinus)*, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 205 : Régimb., *Mon.*, 1883, p. 137
Hab. Ceylon, S. India, [*Ind. Mus.* S. India].

Genus GYRINUS.

Geoffroy, Ins. Paris., i, 1762, p. 193 : Fabr., Syst. Ent., p. 234 : Syst. Eleuth., i, p. 274 : Latr., Hist. Nat. Crust., Ins., iii p. 75 : Brullé, Hist. Nat. Ins. Col., ii, p. 235 : Aubé, Dejean Spec., vi, p. 655 : Suffrian, Stettin Ent. Zeit., 1842, p. 43 : Lacord., Gen. Col., i, p. 438 : Jacq. Duval, Gen. Col. Eur., i, p. 79 : Mun. Cat., p. 468 : Régimbart, *Mon.*, 1883, p. 141 : Sharp, Biol. Centr. Amer., Col., i (2), p. 50 : Leconte & Horn, Class. Col., p. 69.

ceylonicus, Régimbart, *Mon.*, 1883, p. 164.
Hab. Ceylon.

convexiusculus, W. MacLeay, Trans. Ent. S. N. S. Wales, ii, 1871, p. 132 : Régimb., *Mon.*, 1883, p. 166, t. 6, f. 88.
nitidulus, pt., Aubé, Dejean Spec., vi, 1838, p. 700.
Hab. India, Madras, China, Kiangsi, Tibet, New Caledonia, Australia, [*Ind. Mus.*, Madras].

Dejeanii, Brullé, Exped. Morée, iii, 1832, p. 128, t. 34, f. 10 : Lap. de Casteln., Hist. Nat. Ins. Col., i, p. 170 : Régimb., *Mon.*, 1883, p. 169.
aeneus, Aubé, Dejean Spec., vi, 1838, p. 690 ; Ic. Col., v, p. 389, t. 44, f. 4 : Kirby, Faun. Bor. Amer., p. 80.
nitens, Suffrian, Stettin Ent. Zeit., 1842, p. 254.
Hab. S. Europe, N. Africa, Canaries, China, Kiangsi.

indicus, Aubé, Dejean Spec., vi, 1838, p. 689 : Régimb., *Mon.*, 1883, p. 173.
Hab. India.

nitidulus, Fabricius, Ent. Syst. Suppl., 1798, p. 66 ; Syst. Eleuth., i, p. 276 : Dejean, Spec., vi, p. 700 : Régimb., *Mon.*, 1883, p. 165, t. 6, f. 87.
Hab. India, Pondicherry, Bourbon, Mauritius.

oceanicus, Régimbart, *Mon.*, 1883, p. 154.
Hab. Philippines.

orientalis, Régimbart, *Mon.*, 1883, p. 167.
Hab. China.

sericeolimbatus, Régimbart, *Mon.*, 1883, p. 185.
Hab. Java, Celebes, Philippines.

smaragdinus, Régimbart.
Hab. Assam [*Ind. Mus.*, N. Khasiya Hills].

tenuistriatus, Régimbart, *Mon.*, 1883, p. 144.
Hab. Philippines.

viridimaculatus, Régimbart, Ann. Soc. Ent. Fr. (6s.) x, 1890.
Hab. India, Khasiya Hills.

ORECTOCHILINI:—Régimbart, *Mon.*, 1883, p. 387.

Genus **ORECTOCHILUS**.

Lacordaire, Faun. Ent. Paris., i, 1835, p. 344 ; Gen. Col., i, p. 44 : Jacq. Duval, Gen. Col. Eur., i, p. 89 : Mun. Cat., p. 474 : Régimb., *Mon.*, 1883, p. 410.
Patrus, Aubé, Dejean Spec., vi, 1838, p. 724 : Lacord., Gen. Col. i, p. 441 : Mun. Cat., p. 475.

andamanicus, Régimbart, *Mon.*, 1883, p. 435, t. 12, f. 138 ; *id.*, Suppl. 1886, p. 265.
Hab. Andaman Islands, Calcutta [*Ind. Mus.*, Andamans].

angulatus, Régimbart, Ann. Mus. Civ. Gen., xviii, 1882, p. 72 ; *id.*, *Mon.*, 1883, p. 421, t. 12, f. 128.
Hab. Borneo, Sarawak.

Baerii, Régimbart, *Mon.* Suppl., 1886, p. 262.
Hab. Philippines, Manilla.

bipartitus, Régimbart, Notes Leyden Mus., iv, 1882, p. 65 ; *id.*, *Mon.*, 1883, p. 426, t. 12, f. 132.
Hab. Java.

cardiophorus, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 620.
Hab. Burma, Kakhyen Hills, Tenasserim, Plapa [*Ind. Mus.*, Tenasserim].

Castetsii, Régimbart, Ann. Soc. Ent. Fr., (6s.) x, 1890.
Hab. Madras, Kodeikanal Hills.

ceylonicus (*Gyretes*), Redtenbacher, Reise Novara, Zool. ii, Col., 1867, p. 24, t. 1, f. 10 : Régimb., *Mon.*, 1883, p. 416, t. 12, f. 125, 125*a*.
conspicuus, Régimbart, Notes Leyden Mus., iv, 1882, p. 64.
Hab. India, Madras, Ceylon [*Ind. Mus.*, Tenasserim].

cordatus, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 621.
Hab. Burma, Tenasserim, Thagata.

corpulentus, Régimbart, *Mon.*, 1883, p. 411, t. 12, f. 121 ; *id.*, Ann. Mus. Civ. Gen. (2s.) vi, 1888, p. 619.
Hab. Burma, Tenasserim, Borneo [*Ind. Mus.*, Tenasserim].

crassipes, Régimbart, *Mon.*, 1883, p. 411, t. 12, f. 120.
Hab. Borneo.

cribellatus, Régimbart, Ann. Soc. Ent. Fr., (6s.) x, 1890.
Hab. India

cylindricus, Régimbart, *l. c.*
Hab. India.

Desgodinsii, Régimbart, *Mon.* Suppl., 1886, p. 260, t. 4, f. 10.
Hab. Darjiling, Padong.

dilatatus (*Patrus*), Redtenbacher, Reise Novara, Zool. ii, Col., 1867, p. 25, t. 1, f. 12 : Régimb., *Mon.*, 1883, p. 419, t. 12, f. 126.
Hab. Madras, Ceylon.

discifer (*Gyrinus*), Walker, Ann. Mag. N. H., (3s.) iii, 1859, p. 51 : (*Gyretes*) Redténb., Reise Novara, Zool. ii, Col., 1867, p. 24, t. 1, f. 11 : Régimb., *Mon.*, 1883, p. 416.
Hab. Ceylon, Malacca [*Ind. Mus.* Kodeikanal Hills, Madras].

discus, Aubé, Dejean Spec., vi, 1838, p. 743 : Régimb., *Mon.*, 1883, p. 422.
Hab. Philippines.

Fairmairei, Régimbart, *Mon.*, 1883, p. 428, t. 12, f. 135.
Hab. Ceylon.

Feae, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 621.
Hab. Burma, Tenasserim, Thagata.

fraternus, Régimbart, *Mon.*, 1883, p. 417, t. 12, f. 142.
Hab. Ceylon.

gangeticus (*Gyrinus*), Wiedemann, Germar Mag. Ent., iv, 1821, p. 119 : Aubé, Dejean Spec., vi, p. 740 : Régimb., *Mon.*, 1883, p. 434, t. 12, f. 137 *a. b.*
Hab. India, Java [*Ind. Mus.*, Murshidabad, Jessore].

Gestroii, Régimbart, Ann. Mus. Civ. Gen., xviii, 1882, p. 72 ; *id.*, *Mon.*, 1883, p. 438, t. 12, f. 140.
Hab. Borneo, Sarawak.

indicus, Régimbart, *Mon.*, 1883, p. 435, ♀.
Hab. India.

javanus (*Patrus*), Aubé, Dejean Spec., vi, 1838, p. 725 ; *id.*, Ic. Col., v, p. 398, t. 46, f. 1 : Lacord., Gen. Col., i, p. 442 : Régimb., *Mon.*, 1883, p. 420, t. 12, f. 129, 129*a*.
Hab. Java.

limbatus, Régimbart, *Mon.*, 1883, p. 424, ♀.
Hab. India.

lucidus, Régimbart, Notes Leyden Mus., iv, 1881, p. 66 ; *id.*, *Mon.*, 1883, p. 425, t. 12, f. 131, ♀ : *id.*, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 623.
Hab. Java, Burma, Rangoon.

marginipennis, Aubé, Dejean Spec., vi, 1838, p. 744 : Régimb., *Mon.*, 1883, p. 429, t. 12, f. 133, *a. b.*
subsulcatus, Régimb., Notes Leyden Mus., ii, 1880, p. 215 : Midden Sumatra, iv, 6, t. 1, f. 10.
Hab. Java, Sumatra.

metallicus, Régimbart, *Mon.*, 1883, p. 418, t. 12, f. 143, ♀ : *id.*, Suppt, 1886, p. 262.
Hab. India, Padong in Sikkim.

Oberthurii, Régimbart, *Mon.*, 1883, p. 423.
Hab. Philippines.

oblongiusculus, Régimbart, *Mon.* Suppt., 1886, p. 262, t. 4, f. 11.
Hab. Sikkim, Padong.

procerus, Régimbart, *Mon.*, 1883, *l. c.*, p. 415.
Hab. Cochinchina.

productus, Régimbart, *Mon.*, 1883, p. 422, t. 12, f. 130; Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 156; *id.*, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 623.
Hab. India, Burma, Rangoon, Cochinchina, S. China, Borneo.

pubescens, Régimbart, Ann. Mus. Civ. Gen., xviii, 1882, p. 73; *id.*, *Mon.*, 1883, p. 419, t. 12, f. 127, 127*a*.
Hab. Borneo, Sarawak.

pulchellus, Régimbart, *Mon.*, 1883, p. 424.
Hab. Philippines, Timor.

punctulatus, Régimbart, *Mon.*, Suppt. 1886, p. 261.
Hab. Kodeikanal Hills, Madras.

pusillus, Régimbart, Ann. Mus. Civ. Gen., xviii, 1882, p. 74; *id.*, *Mon.*, 1883, p. 430, ♂.
Hab. Borneo, Sarawak.

Ritsemae, Régimbart, Notes Leyden Mus., iv, 1881, p. 67; *id.*, *Mon.*, 1883, p. 431, t. 12, f. 136.
Hab. Java.

rivularis, Régimbart, *Mon.*, 1883, p. 427, ♀.
Hab. Cochinchina.

scalaris, Régimbart, Notes Leyden Mus., ii, 1880, p. 215; *id.*, *Mon.*, 1883, p. 430, t. 12 f. 134, 134*a*: Midden Sumatra, iv, 6, t. 1, f. 11; Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 623.
Hab. Burma, Tenasserim, Thagata; Sumatra, Cambodia, Andamans [*Ind. Mus.*, Andamans].

sculpturatus, Régimbart, *Mon.*, 1883, p. 425, ♂: *id.*, Suppt., 1886, p. 263, ♀.
Hab. Hongkong.

semivestitus, Guérin, Rev. Zool., 1840, p. 38: Régimb., *Mon.*, 1883, p. 413, t. 12, f. 123, 123*a*.
Hab. India, Pondicherry [*Ind Mus.*, S. India].

spiniger, Régimbart, Notes Leyden Mus., 1880, p. 214: *id.*, *Mon.*, 1883, p. 436, t. 12, f. 139; Midden Sumatra, iv, 6, t. 1, f. 9.
Hab. Cochinchina, Laos, Sumatra.

sublineatus, Régimbart, Ann. Soc. Ent. Fr., (6s.) x, 1890.
Hab. India, Assam.

trianguliger, Régimbart, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 622.
Hab. Burma, Tenasserim, Thagata.

Wehnckei, Régimbart, *Mon.*, 1883, p. 414, t. 12, f. 124, ♀.
Hab. Ceylon.

Family **PAUSSIDÆ**.

Catalogue of the Insecta *of the Oriental Region*, No. 6, *Order* Coleoptera

Family PAUSSIDÆ. *By* E. T. ATKINSON, B. A.

The genus *Paussus* was established by Dahl in 1775, and the genus *Cerapterus* by Swederus in 1788. In 1800, Donovan showed that these

two genera were allied, and, subsequently, Latreille formed them into a family which he named *Paussili*, afterwards changed by Leach into *Paussides*. Mr. J. O. Westwood commenced his labours on this family in 1830, describing many new species, and creating several genera, and subsequently summarised his work in the 'Arcana Entomologica' which contains descriptions and excellent figures of the fifty-two species known up to 1845. In the Oxford 'Thesaurus entomologicus,' Mr. Westwood added many new species, and figured fifty-four species which comprised all those unfigured up to 1874. Since then, but six new species from the Oriental Region have been described, and Mr. Westwood's works consequently form the best guide to the study of the family. Boyes and Benson may also be mentioned as having brought to notice several species from India, in the pages of the *Journal of the Asiatic Society* of Bengal. In 1886, M. Raffray described a number of new species, chiefly African, and further summarised the results of Mr. Westwood's work, adding chapters on the morphology and classification of the family, followed by synoptical tables of the genera, and a list of species. M. Raffray divides the family into two tribes *Cerapterini* and *Paussini*; in the former, the labial and maxillary palpi are large, free, and never conceal the buccal cavity, whilst in the latter, the labial, and especially the maxillary palpi are short and thick, and conceal the buccal cavity. The *Paussidae*, as suggested by Burmeister, appear to be most closely allied to the *Carabidae*. Crotch, in 1873, included the *Rhysodidæ* also in the *Adephaga*, but Horn writes:—'These must be excluded for many reasons, more especially as they fail to present the ventral structure which may safely be taken as the key. If we admit them there is no reason why some and after them all the *Colydiidæ* should not be admitted, and the door would be opened to much of the *Clavicorn* series. It must be admitted, however, that *Paussus* is the nearest approach of the *Clavicorn* series to the *Adephaga*, the approximation in another direction being through the *Byrrhidæ* and *Parnidæ* with, however, a very wide interval.' In many European Catalogues the *Paussidæ* are placed after the *Carabidæ*, I place them here as more convenient.

The *Paussidæ* are small insects of a quadrate form with very remarkable clubbed antennæ, so much so that Afzelius formed them into a separate section of the Coleoptera from this character alone. They have been found by Benson, Champion, Trimen and Guenzius in ants' nests, and it is, perhaps, for this reason that they are so seldom seen in collections, as the ants appear to keep the *Paussidæ* prisoners within the formicarium. A few have been captured at the light at night, but the more successful collectors have, as stated, found them by examining the

nests, especially of the smaller species of ants. M. Raffray's list shows 4 species from Western Asia, 48 from the Oriental Region, 86 from Africa, 20 from Australia, 2 from Europe, and 8 common to several regions. The Indian Museum has only a very few specimens in its collection.

Afzelius, A.:—

Observations on the Genus Paussus and description of a new species. Trans. Linn. Soc. Lond., iv, 1798, p. 243-275, fig.

Benson, W. H.:—

'On Paussidae,' in Calcutta Journal Natural History, vi, 1846, p. 459.

Boyes, J. E.:—

Extract from note-book regarding Genus Paussus, in Journ. As. Soc. Ben., xii, 1843, p. 421, *t. ann.*, f. 1-8.

Burmeister, H. C. C.:—

'Observations sur les affinités naturelles de la famille des Paussides' in Mag. Zool., 1841, An. xi, no 76, p. 15, fig.; *id.*, Bull. Soc. Ent. Fr., 1841, p. xxxi.

Donovan, E.:—

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Mon.:—Matériaux pour servir a l'étude des Coléoptères de la famille des Paussides, in Nouvelles Archives du Muséum d'Histoire Naturelle, (10s.) viii, 1886, p. 307-359; *ib.*, ix, p. 1-52: Fauvel, Rev. d'Ent., vi, 1887, p. 291.

Westwood, J. O:—

Trans. Linn. S. Lond.—'On the Paussidae, a family of Coleopterous Insects,' in Transactions of the Linnean Society of London, xvi, 1830, p. 607—684, t. 33.

Synopsis of the Coleopterous Genus *Cerapterus*, in *ib.*, xviii, 1840, p. 581-5, t. 39 c.

Synopsis of the Coleopterous family Paussidæ with descriptions of a new genus and some new species, in *ib.*, xix, 1841, p. 45.

Description of some new species of the Genus *Cerapterus* &c., in Proc. Linn. Soc. Lond., i, 1840, p. 75, 110, 115, 133; *id.*, Ann. Mag. N. H., vii, 1841, p. 532; viii, p. 449; x, p. 409.

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'On the Genus *Cerapterus* of Swederus', in Ent. Mag., v, 1838, p. 500-505.

Arc. Ent.:—'Arcana Entomologica, or Illustrations of new, rare, and interesting Insects', ii, p. i, 37, 73, 161, t. 49, 50, 58, 68, 88-94. London 1843-45.

'On *Paussidae*,' in 'Thesaurus entomologicus Oxoniensis,' 1874, p. 72—96, t. 15-19.

Family **PAUSSIDAE.**

Westwood, Trans. Linn. S. Lond., 1830, p. 609 ; *id*, Arc. Ent., ii, p 2 : Lacord., Gen. Col., ii, 1854, p. 6 : Mun. Cat., p. 700.

Paussili, Latreille, Gen. Crust. Ins. iii, 1807, p. 1 ; *id.*, Consid. Gén. Nat. Ord. Ins., 1810 p. 225.

Paussides, Leach, Edinb. Encycl., 1818.

CERAPTERINI:—Raffray, *Mon.*, viii, p. 335.

Genus **CERAPTERUS.**

Swederus, Kong. Vetensk.-Acad. Nya Handl., ix, 1788, p. 203 : Westwood, Trans. Linn. S. Lond., xvi, p. 666; xviii, p. 581; Arc. Ent., ii, 1843, p. 6 : Lacord., Gen. Col., ii, p. 8 : Raffray, *Mon.*, viii, p. 336.

Ceratopterus, Mun. Cat., p. 700.

Subg. { *Euthysoma*, Thomson, *l. c. infra.*
Orthopterus, Westwood, Ent. Mag., v, 1838, p. 502; *id.*, Arc. Ent., ii, p. 7 : Lacord., Gen. Col. ii, p. 9 : Mun. Cat., p. 701.

Horsfieldii, Westwood, Trans. Linn. S. Lond., xvi, 1833, p. 672 ; xviii, p. 583 ; *id.*, Arc. Ent., ii, p. 7, t. 49, f. 2 : MacLeay, Ann. South Afric., t. 4. f. *sup. dextr.*
Hab. Java.

latipes, Swederus, Kong. Vetensk.-Acad. Nya. Handl., ix, 1788, p. 203, t. 6, f. 1 : Westwood, Trans. Linn. S. Lond., xvi, p. 669 ; xviii, p. 582 ; Arc. Ent. ii, p. 6, t. 49, f. 1 : MacLeay, Ann. South Afric., t. 4, f. *inf. sinistr.*
Hab. Bengal, Pondicherry, Ceylon.

quadrimaculutus, Westwood, Trans. Linn. S. Lond., xviii, 1833, p. 583; *id.*, Arc. Ent., ii, p. 7, t. 49, f. 3.
Hab. Java.

Genus **PLEUROPTERUS.**

Westwood, Trans. Linn. S. Lond., xviii, 1840, p. 585 ; *id.*, Arc. Ent., ii, p. 9 : Lacord., Gen. Col., ii, p. 10 : Mun. Cat., p. 702 : Raffray, *Mon.*, viii, p. 338.

Heteropaussus, Thomson, Mus. Scient., ii, 1860, p. 70 : Mun. Cat., p. 702.

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Hab. Ceylon, Java.

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Genus **MELANOSPILUS.**

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Subg. *Ceratoderus*, Westwood, Trans. Linn. S. Lond., xix, 1841, p. 51; Trans. Ent. S. Lond., v, p. 23; Thes. Ent. Oxon, p. 79 : Lacord., Gen. Col., ii, p. 10 : Raffray, *Mon.*, viii, p. 340 : Mun. Cat., p. 702.

Subg. *Merismoderus*, Westwood, Trans. Ent. S. Lond., v, 1845, p. 23 : Thes. Ent. Oxon., 1874, p. 80 : Lacord., Gen. Col. ii, p. 11 : Raffray, *Mon.*, viii, p. 341 : Mun. Cat., p. 702.

Bensonii (*Merismoderus*), Westwood, Trans. Ent. S. Lond., v, 1845, p. 23, t. 2. f. 2; Cab. Orient. Ent., p. 84, t. 41, f. 4; *id.*, Thes. Ent. Oxon., 1874, p. 80, t. 18, f. 1: Benson, Calc. Jl. Nat. Hist., vi, 1846, p. 466, 470: Raffray, *Mon.*, t. 17, f. 25-27.

Hab. Bengal, Cawnpore and Saháranpur districts.

bifasciatus, Kollar, Ann. Wien. Mus., i, 1826, p. 336, t. 31, f. 7 *a.b*: Westwood, Trans. Ent. S. Lond., ii, 1835, p. 90, t. 10, f. 3: *id.* (*Ceratoderus*), Trans. Linn., S. Lond., xix, p. 51; Arc. Ent., ii, p. 37. t. 58, f 1; Thes. Ent. Oxon., p. 80: Raffray, *Mon.*, t. 15, f. 6, t. 16, f. 22-24.

Hab. India.

Genus **LEBIODERUS**.

Westwood, Trans. Ent. S. Lond., ii, 1835, p. 93: Raffray, *Mon.* viii, p. 343: Mun. Cat., p. 702.

Gorii, Westwood, Trans. Ent. S. Lond., ii, 1835, p. 94, t. 9, f. 8, *a-d*; *id.*, Arc. Ent., ii, p. 39, t. 58, f. 3: Raffray, *Mon.*, t. 15, f. 7, 8; t. 17, f. 28-32.

Hab. Java.

Percheronii, Westwood, Thes. Ent. Oxon., 1874, p. 80, t. 17, f 3.

Hab. Java.

Genus **PLATYRHOPALUS**.

Westwood, Trans. Linn. S. Lond., xvi, 1830, p. 654; *id.*, Arc. Ent., ii, p. 73: Lacord., Gen. Col. ii, p. 13: Raffray, *Mon.*, viii, p. 344: Mun. Cat., p. 703.

acutidens, Westwood, Trans. Linn. S. Lond., xvi, 1833, p. 661, t. 33, f. 50; xix, p. 51; *id.*, Arc. Ent. ii, p. 79.

Hab. India.

angustus, Westwood, Trans. Ent. S. Lond., ii, 1835, p. 92, t. 10, f. 6; *id.*, Arc. Ent. ii, p. 73, t. 68, f. 3: Boyes, Jl. As. Soc. Ben., xii, 1843, p. 421.

suturalis, Westwood, Arc. Ent., ii, 1845, p. 161, 190, t. 88, f. 1*a*: Boyes, Jl. As. Soc. Beng., xii, p. 427, t. *ann.*, f. 2.

Hab. India, Nimach, Mhow.

aplustrifer, Westwood, Trans. Linn. S Lond., xvi, 1833, p. 664, t. 33, f. 51; *id.*, Arc. Ent., ii, p. 163, t. 88, f. 3.

Hab. Bengal.

Castelnaudii, Westwood, Thes. Ent. Oxon., 1874, p. 96.

Hab. Siam, Juthia.

Comottii, R. Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 311, fig.

Hab. Burma.

Davidis, Fairmaire, Le Nat., viii, 1886, p. 224; *id.*, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 317.

Hab. China, Kiangsi.

denticornis, Donovan, Ins. India, 1800, t. 5, f. * : Rees, Encycl., Entom., t. 8, f. 10, 10 * : Westwood, Trans. Linn. S. Lond., xvi, p. 657, t. 33, f. 43-48 ; xix, p. 50 ; Arc. Ent., ii, p. 77, t. 68, f 1 : Burmeister, Mag. Zool., 1841, Ins., t. 76, f. 2 : Lacord., Gen. Col., Atlas. t. 14, f. 3.

var. *denticornis* (Megerle), Gyllenhal, in Schönherr, Syn. Ins., i (3), App., 1817, 14, t. 6, f. 1, *a. b*, p, 19, No. 5 ; *ib.*, Schönherr, i (3), p. 19 : Dalm., Anal. Ent 1 p. 103.

unicolor, Westwood, Trans. Linn. S. Lond., xvi, 1830, p. 659, t. 33, f. 49 ; xix, p. 50 ; *id.*, Arc. Ent., ii, p. 79, t. 63, f. 4.

Hab. India, Tibet [*Ind. Mus.* Calcutta].

intermedius, Benson, Calc. Jl. Nat. Hist., vi, 1846, p. 465 : Westwood, Trans. Ent. S. Lond., v, 1846, p. 25.

Hab. India, Saháranpur, N.-W. Provinces.

irregularis, Ritsemae, Notes Leyden Mus., ii, 1880, p. 249.

Hab. Java, Bandong.

Mellii (*Mellei*), Westwood, Trans. Linn. S. Lond., xvi, 1830, p. 685 ; *id.*, Trans. Ent. S. Lond., ii, 1835, p. 91, t. 10, f. 4 ; *id.* (*Melii*), Arc. Ent., ii, p. 162, t. 88, f. 2 ; Thes. Ent. Oxon., 1874, p. 82, t. 18, f. 2 : Guérin, Icon. Règne Anim., Ins., t. 40, f. 11 : Raffray, *Mon.*, t. 17, f. 33-37.

Hab. India, Malabar.

Pictetii, Westwood, Thes. Ent. Oxon., 1874, p. 82, t. 18, f. 3.

Hab. Siam, Cochinchina.

Simonis, Dohrn, Stettin. Ent. Zeit., xlvii, 1886, p. 120.

Hab. Hongkong.

vexillifer, Westwood, *l. c.*, p. 82, t. 17 f. 4.

Hab. Penang.

Westwoodii, Saunders, Trans. Ent. S. Lond., ii, 1835, p. 84, t. 10, f. 5, *a-e* : Westwood, Trans. Linn. S. Lond., xix, p. 51 ; Arc. Ent., ii, p. 78, t. 68, f. 2 *a-e*.

Hab. India.

Genus **PAUSSUS.**

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affinis, Westwood, Trans. Linn. S. Lond., xvi, 1830, p. 646, t. 33, f. 36, 37 ; *ib.*, xix, p. 49, note ; *id.*, Arc. Ent., ii, p. 188, t. 94, f. 2.

Hab. Africa ?

Andreae, Ritsema, Notes Leyden Mus., i, 1879, p. 44.

Hab. W. Java, Buitenzorg.

bicolor, Raffray, *Mon.*, ix, 1886, p. 22, t. 19, f. 25.

Hab. Andaman Islands.

Bowringii, Westwood, Proc. Linn. S. Lond., ii, 1849, p. 58 ; *id.*, Thes. Ent. Oxon., p. 89, t. 16, f. 9.
Hab. Hongkong.

Boysii, Westwood, Arc. Ent., ii, 1845, p. 177, t. 92, f. 2 ; t. 90, f. 6 : Boys, *Paussus*, no 6, Jl. As. Soc. Ben., xii, p. 433, *t. ann.* f. 6.
Hab. India.

cognatus, Westwood, Trans. Linn. S. Lond., xix, 1841, p. 49 ; *id.*, Arc. Ent., ii, p. 189, t. 94, f. 3.
Hab. Bengal.

denticulatus, Westwood, Arc. Ent., ii, 1845, p. 179, t. 92, f. 1 ; t. 90, f. 17 ; *id.*, Thes. Ent. Oxon., 1874, p. 88, t. 16, f. 12 : Boys, *Paussus*, no 1, Jl. As. Soc. Ben. xii, 1843, p. 426, *t. ann.*, f. 1.
Hab. India, Mhow.

Fichtelii, Donovan, Ins. India, 1800, t. 5, f. ** : Rees, Encycl., Ent., t. 8, f. 12 : Westwood, Trans. Linn. S. Lond., xvi, p. 641, t, 33, f. 31-33 ; *id.*, Arc. Ent., ii, p. 181, t. 90, f. 5, 8, 9 : Saunders, Trans. Ent. S. Lond., ii, 1835, p. 83, t. 9. f. 1 : Boys, Jl. As. Soc. Ben., xii, p. 429, *t. ann.*, f. 4,5.
Hab. India.

fulvus, Westwood, Trans. Linn. S. Lond., xix, 1841, p. 47 ; *id.*, Arc. Ent., ii, p. 175, t. 90, f. 3.
Hab. India.

Hardwickii, Westwood, Trans. Linn. S. Lond., xvi, 1830, p. 649, t. 33, f. 39, 40 ; *id.*, Arc. Ent., ii, p. 189, t. 94, f. 5 : Boys, Jl. As. Soc. Beng., xii, p. 434, *t. ann.*, f. 8.
Hab. Nepal.

Hearseyanus, Westwood, Proc. Linn. S. Lond., 1842, p. 133 ; *id.*, Arc. Ent., ii, p, 189, t. 94, f. 4 : Boyes, Jl. As. Soc. Beng., xii, p. 427, *t. ann.*, f. 3.
Hab. Sultanpur near Benares.

hystrix, Westwood, Proc. Linn. S. Lond., ii, 1849, p. 59 ; *id.*, Thes. Ent. Oxon., p. 89, t. 16, f. 5.
Hab. Hongkong.

Jerdanii, Westwood, Trans. Ent. S. Lond., 1846, p. 26, t. 2, f. 1 ; Cab. Orient. Ent., t. 41, f. 5 ; *id.*, Thes. Ent. Oxon., p. 88, t. 18, f. 4.
Hab. India.

Jousselinii, Guérin, Rev. Zool., 1838, p. 21 : Westwood, Trans. Ent. S. Lond., ii, p. 90 ; Arc. Ent., ii, p. 169 : Olivier, Ann. Soc. Ent. Fr., (6s.) iii, 1883, p. 195, t. 7, f. 1.
Hab. China, Hongkong, Pegu, Rangoon.

Ludekingii, Vollenhoven, Stettin. Ent. Zeit., xxxiii, 1872, p. 82 ; *ib.*, 1873, t. 1, f. 6 : Westwood, Thes. Ent. Oxon., p. 95.
Hab. Sumatra.

nauceras, Benson, Calc. Jl. Nat. Hist., vi, 1846, p. 461 : Westwood, Trans. Ent. S. Lond., v, 1846, p. 25 ; *id.*, Thes. Ent. Oxon., p. 87, t. 16, f. 8.
Hab. India, Mussoorie, Landour.

pacificus, Westwood, Trans. Ent. S. Lond., iii, 1855, p. 81 ; *id.*, Thes. Ent. Oxon., p. 88, t. 16, f. 7.
Hab. Ceylon.

pilicornis, Donovan, Ins. India, 1800, t. 5, f. *** : Rees, Encycl., Ent., t. 8, f. 13 : Westwood, Trans. Linn. S. Lond., xvi, p. 643, t, 33. f. 34 ; *id.*, Arc. Ent., ii, p. 173, t. 89, f. 1.
Hab. Bengal

ploiophorus, Benson, Calc. Jl. Nat. Hist., vi, 1846, p. 463 : Westwood, Trans. Ent. S. Lond., v, p. 25 ; *id.*, Thes. Ent. Oxon., p. 87, t. 16, f. 11.
Hab. India, Moradabad, N. W. P.

politus, Westwood, Proc. Linn. S. Lond., ii, 1849, p. 53 ; *id.*, Thes. Ent. Oxon., p. 87, t. 16, f. 10.
Hab. India.

rufitarsis, Westwood, Trans. Linn. S. Lond., xvi, 1830, p. 638, t. 33, f. 25-27 ; *id.* Arc. Ent., ii, p. 172, t. 89, f. 4.
Baconii, Benson, Calc. Jl. Nat. Hist., 1846, p. 459 : Westwood, Trans. Ent. S. Lond., v, 1847, p. 24.
Hab. India, Dehra Dún.

Saundersii, Westwood, Trans. Linn, S. Lond., xix, 1841, p. 50; *id.*, Arc. Ent., ii, p. 190, t. 94, f. 6.
Hab. India.

Schiödtei, Westwood, Thes. Ent. Oxon., 1874, p. 85, t. 16, f. 6.
Hab. Bengal.

sinicus, Westwood, Proc. Linn. S. Lond., ii, 1849, p. 57 ; *id.*, Thes. Ent. Oxon., p. 85, t. 18, f. 10.
?=Jousselinii, Guérin, *q. v.*
Hab. Honkong.

Spencei, Westwood, Proc. Ent. S. Lond., (3s.) i, 1864, p. 190 ; *id.*, Thes. Ent. Oxon., p. 90, t. 18, f. 8.
Hab. India.

Stevensianus, Westwood, Trans. Linn. S. Lond., xix, 1841, p. 48 ; *id.*, Arc. Ent., ii, p. 176, t. 90, f. 2.
Hab. India.

thoracicus, Donovan, Ins. India, 1800, t. 5, f. * : Rees, Encycl., Ent. t. 8, f. 11,11* ; Westwood, Trans. Linn. S. Lond., xvi, p. 640, t. 33, f. 28-30 ; *id.*, Arc. Ent., ii, p, 180, t. 90, f. 4.
trigonocornis, Latreille, Gen. Crust., iii, p. 3, t. 11, f. 8 : Schönherr, Syn. Ins., i, (3.), p. 19.
Hab. India, Bengal.

tibialis, Westwood, Trans. Linn. S. Lond., xix, 1841, p. 47 ; *id.*, Arc. Ent., ii, p. 174, t. 90, f. 1.
Hab. Bengal.

Waterhousei, Westwood, Thes. Ent. Oxon,, 1874, p. 90, t. 16, f. 4.
Hab. Penang.

Catalogue of the Insecta *of the Oriental Region.* No. 7, *Order* Coleoptera, *Family* Hydrophilidæ.—*By* E. T. Atkinson, B. A.

Family **HYDROPHILIDÆ.**

Lacordaire, Gen. Col., i, 1854, p. 443 : Jacq. Duval, Gen. Col. Eur., i, p. 85 : Mun. Cat., p. 475 : Leconte & Horn, Class. Col., p. 69.

Palpicornes, Latreille, Fam. Nat., p. 365 : Brullé, Hist. Nat. Ins. Col., ii, p. 242 : Lacordaire, *l. c. supra.*

Leconte describes the species of this family as living on 'decomposing vegetable matter, though the larvæ are carnivorous and quite voracious: the majority of them are aquatic. Except those of the tribe *Helophorini*, they are of an oval, convex form, sometimes hemispherical; the elytra are sometimes striate, and sometimes have a distinct sutural stria.' The palpi are slender, and always very long. The tarsi are 5-jointed and according to the length of these joints, the family is divided into four tribes:—*Helophorini*, *Hydrophilini*, *Hydrobiini*, and *Sphaeridini*. Very little has been done to work out the species of this family that occur in the Oriental Region, and this Catalogue is therefore based on the Munich list. Dr. Sharp observes that though the habits of the species of this family are aquatic they cannot correctly be associated with the *Dytiscidæ* and *Gyrinidæ* in the Adephagous series, but will have to be properly placed when more is known about them.

Solier, M:—

Observations sur la tribu des Hydrophiliens et principalement sur le genre *Hydrophilus* de Fabricius, in Ann. Soc. Ent. Fr., iii, 1834, p. 299.

HYDROPHILINI (*Hydrophilides*) :—Lacordaire, Gen. Col., i, 1854, p. 447.

Genus **HYDROPHILUS.**

Geoffroy, Ins. Paris, i, 1764, p. 180 : Solier, Ann. Soc. Ent. Fr., iii, 1834, p. 312 : Lacord., Gen Col., i, p. 450 : Jacq. Duval, Gen. Col. Eur, i, p. 86 : Mun. Cat., p. 475 : Sharp, Biol. Centr. Amer., Col., i (2), p. 54 : Leconte & Horn, Class. Col., p. 71.

Hydrodema, Lap. de Casteln., Hist. Nat. Ins. Col., ii, 1840, p. 51.
Hydrosoma, Lap. de Casteln., *l. c.*, p. 50.
Hydrous, Leach, Zool. Misc., iii, 1817, p. 92.
Mesocanthicus, Hope, Col. Man., ii, 1838, p. 126.
Stethœus, Solier, Ann. Soc. Ent. Fr., iii, 1834, p. 307.
Temnopterus, Solier, *l.c.*, p. 307.
Tetracanthus, Hope, Col. Man., ii, 1838, p. 126.

acuminatus, Motschulsky, Et. Ent., ii, 1853, p. 44.
Hab. China.

caschmirensis, Redtenbacher, Hügel's Kaschm., iv (2), 1844, p. 513, t. 24, f. 2.
Hab India, Kashmir [*Ind. Mus.*, Malda].

nigriceps, Fabr., Syst. Eleuth., i, 1801, p. 254.
Hab. India.

olivaceus, Fabr., Spec. Ins., i, 1781, p 289 ; Mant. Ins., i, p. 188 ; Ent. Syst., i, p. 182 ; Syst. Eleuth., i, p. 250 : Olivier, Ent., iii, 39, p. 10, t. i, f., 7 : Gmelin, *ed.* Syst. Nat., i (4), p. 1941.
hastatus, Herbst, Beschäft. Naturfor. Freunde Berlín, iv, 1779, p, 317, t. 7, f. 2 ; *id.*, Natursyst. Käfer, vii, p. 295, t. 137, f. 6.
Hab. India, Coromandel, Ceylon.

picicornis, Chevrolat, Ann. Soc. Ent. Fr., (4s.) iii, 1863, p. 204.
Hab. Malaya, Philippines.

ruficornis, Klug, Ins. Madag., 1833, p. 159 : Boisduval, Voy. l'Astrolabe, Col., p. 151.
Hab. Java, Philippines, Australia [*Ind Mus.* ? Berhampur.]

viridicollis, Redtenbacher, Hügel's Kashmir, iv (2), 1844, p. 513, t. 24, f. 3.
Hab. India, Kashmir.

Species of doubtful position.

mergus (*Tropisternus*), Redtenbacher, *l.c. supra* p. 514 : Sharp, Trans. Ent. S. Lond., 1883, p. 117.
Hab. India, Kashmir.

Genus **HYDROCHARIS.**

Latreille (*Hydrochare*), Fam. Nat., 1825, p. 366 : ? Solier, Ann. Soc. Ent. Fr., iii, 1834, p. 304 : Mun. Cat., p. 478 : Sharp, Biol. Centr. Amer., Col., i, (2), p. 61 : Leconte & Horn. Class. Col., p. 71.
Hydrophilus, Leach, Zool. Misc., iii, 1817, p. 94 (*nec* Geoffr.)
Hydrous, Brullé Hist. Nat. Ins. Col., ii, 1835, p. 275 (*nec* Leach) : Lacord. Gen. Col. i, p. 452.

bilineatus, MacLeay Annul. Javan., 1825, p. 36.
Hab. Java.

inconspicuus, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 538 ; *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 387.
Hab. Ceylon.

pallidipalpis, MacLeay, Annul. Javan., 1825, p. 35.
Hab. Java.

rufiventris, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 537 ; *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 387.
Hab. Ceylon.

spinicollis (*Hydrophilus*), Eschscholtz, Entomographia, 1822, p. 41.
Hab. India.

Genus **STERNOLOPHUS.**

Solier, Ann. Soc. Ent. Fr. iii, 1834, p. 310 : Brullé, Hist. Nat. Ins. Col., ii, p. 279 : Lacord., Gen. Col., i, p. 453 : Mun. Cat., p. 478.
Helobius, Mulsant, Mém. Acad. Sci. Lyon, i, 1851, p. 75.

fulvipes, Motschulsky, Et. Ent., ii, 1853, p. 45.
Hab. China.

rufipes (*Hydrophilus*), Fabricius, Ent. Syst. i, 1792, p. 183; Syst. Eleuth., i, p. 251 : Herbst, Natursyst. Ins., Käfer, viii, p. 307.
Hab. India, China, Malaya, Philippines.

HYDROBIINI (*Hydrobiides*) :— Lacordaire, Gen. Col., i, 1854, p. 452.

Genus **HYDROBIUS**.

Leach, Zool. Misc., iii, 1817, p. 92 : Solier, Ann. Soc. Ent. Fr., iii, 1834, p. 313 : Brullé, Hist. Nat. Ins. Col., ii, p. 280 : Lacord., Gen. Col., i, p. 455 : Jacq. Duval, Gen. Col. Eur., i, p. 87 : Mun. Cat., p. 479 : Sharp, Biol. Centr. Amer., Col. i (2), p. 64 : Leconte & Horn, Class, Col., p. 72.
Anacaena, Thomson, Skand. Col., i, p. 18, 1859; ii, p. 89, 1860 : Gozis, Bull. Soc. Ent. Fr., (6s.) i, p. cxxxv.
Brachypalpus, Lap. de Casteln., pt. Hist. Nat. Col., ii, 1840, p. 56.
Cryniphilus, Motschulsky, Bull. Mosc., xviii (i), 1845, p. 32.
Enochrus, Thomson, Skand. Col., i, p. 18, 1859; ii, p. 93, 1860.
Paracymus, Thomson, Scand. Col., ix, 1867, p. 120.
Sperchopsis, Leconte, List Col. N. Amer., i, 1863, p. 19, p. 377 : Mun. Cat., p. 487.
Tritonus, Mulsant, Ann. Soc. Agric, Lyon, vii, 1845, p. 377.

neglectus, Hope, Trans. Ent. S. Lond., iv, 1845, p. 16.
Hab. China.

semistriatus, Schaufuss, Hor. Ent. Ross., xxi, 1887, p. 108.
Hab. Singapur.

stultus, Walker, Ann. Mag. N. H., (3s) ii, 1858, p. 209.
Hab. Ceylon.

Genus **HYDROCASSIS**.

Fairmaire, Ann. Soc. Ent. Fr., (5s.) viii, 1878, p. 88.

scapulata, Fairmaire, *l.c.*, p. 89.
Hab. Middle China.

Genus **PHILYDRUS**.

Solier, Ann. Soc. Ent. Fr., iii, 1834, p. 315 : Brullé, Hist. Nat. Ins. Col., ii, p. 276 : Lacord., Gen. Col., i, p. 456 : Jacq. Duval, Gen. Col. Eur., i, p. 58 : Mun. Cat., p. 480 : Sharp, Biol. Centr. Amer., Col., i (2), p. 66 : Leconte & Horn, Class, Col., p. 72.
Brachypalpus, Lap. de Casteln., pt, Hist. Nat. Col., ii, 1840, p. 480.
Philhydrus, Mun. Cat., *auct.*
Pylophilus, Motschulsky, Bull. Mosc., xviii (i), 1845, p. 32; Et. Ent., viii, 1859, p. 46.

esuriens, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 209.
Hab. Ceylon.

fuscatus, Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 109.
Hab. Ceylon.

nigriceps, Motschulsky, Et. Ent., viii, 1859, p. 40.
Hab. India.

nigriceps, Redtenbacher, Reise Novara, Zool., ii, Col., 1867, p. 26.
Hab. Nicobar Islands.

nigropiceus, Motschulsky, Bull. Mosc, xxxiv (i), 1861, p. 109.
Hab. Ceylon.

pallens (*Enhydrus*), MacLeay, Annul. Javan., 1825, p. 35.
Hab. Java.

Genus **BRACHYGASTER**.

Mulsant, Ann. Soc. Linn. Lyon, 1833, p. 380 : Mun. Cat., p. 483.
indica, Mulsant, *l.c. supra* p. 386.
Hab. India.

Genus **BEROSUS**.

Leach, Zool. Misc., iii, 1817, p. 92 : Solier, Ann. Soc. Ent. Fr., iii 1834, p. 316 : Brullé, Hist. Nat. Ins. Col., ii, p. 284 : Lacord., Gen. Col., i, p. 458 : Jacq. Duval., Gen. Col. Eur., i, p. 89 : Mun. Cat., p. 483 : Sharp, Biol. Centr. Amer., Col., i (2), p. 78 : Leconte & Horn, Class. Col., p. 72.

Anchialus, Thomson, Skand. Col., i, p. 17 ; ii, p. 87, 1859.
Enoplurus, Hope, Col. Man., ii, 1838, p. 128.

acutispina, Fairmaire, Ann. Soc. Ent. Fr., (6s.) viii, 1888, p. 336.
Hab. Tonkin.

aeneiceps, Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 110.
Hab. Ceylon.

attenuatus (*Hydrophilus*), Fabricius, Syst. Eleuth., *i*, 1801, p. 253.
aeneus (*Volvulus*), Brullé, Hist. Nat., Ins. Col., ii, 1835, p. 282.
Hab. Ceylon.

decrescens, Walker, Ann. Mag. N. H., (3s.) iii, 1859, p. 258.
Hab. Ceylon.

indicus (*Enoplurus*), Motschulsky, Bull. Mosc., xxxiv (i), 1864, p. 110.
Hab. India.

pubescens, Mulsant, Opusc. Ent., ix, 1859, p. 61.
Hab. Philippines.

pulchellus, MacLeay, Annul. Javan., 1825, p. 35.
Hab. Java.

Genus **GLOBARIA**.

Latreille, Régne Anim, (2ed.), iv, 1829, p. 521 : Lacord., Gen, Col., i, p. 460 : Mun. Cat., p. 485.
Spheroides, Hope, Col. Man., ii, 1838, p. 168.

Leachii, Latreille, Régne Anim., iv, 1829, p. 521 : Hope, Col. Man., ii, 1838, p. 167, t. 3, f. 6, *a-i*.
Hab. India.

Muellerii, Kirsch, MT. Mus. Dresd., i, 1875, p. 25.
Hab. Malacca.

striatopunctata, Lap. de Casteln., Hist. Nat. Ins. Col., ii, 1850, p. 57.
Hab. India.

Genus **AMPHIOPS.**

Erichson, Wiegm. Arch. Natur. (1), 1843, p. 229 : Lacord., Gen. Col., i, p. 462 : Mun. Cat., p. 486.

gibbus (*Hydrophilus*), Illiger, Mag. Ent., i, 1802, p. 168.
Hab. India.

pisiformis Fairmaire, Bull. Soc. Ent. Fr., (6s.) iv, 1884, p. xlvi.
Hab. Cambodia.

SPERCHEINI (*Sperchéides*) :—Lacordaire, Gen. Col., i, 1854, p. 462.

Genus **SPERCHEUS.**

Kugellann, Illig., Verz. Käfer Preuss., 1798, p. 241 : Fabr., Ent. Syst., i, p. 248 ; Syst. Eleuth., i, p. 248 : Solier, Ann. Soc. Ent. Fr., iii, 1834, p. 317 : Brullé, Hist. Nat. Ins., Col., ii, p. 299 : Lacord., Gen. Col., i, p. 464 : Jacq. Duval, Gen. Col. Eur., i, p. 91 : Mun. Cat., p. 487.

platycephalus, MacLeay, Annul. Javan., 1825, p. 35 : Lap. de Casteln., Hist. Nat. Ins. Col., ii, p. 57.
Hab. Java.

HELOPHORINI (*Hélophorides*) :—Lacordaire, Gen. Col., i, 1854, p. 465.

Genus **EPIMETOPUS.**

Lacordaire, Gen. Col., i, 1854, p. 467 : Bedel, Bull. Soc. Ent. Fr., (5s.) x, 1880, p. lxxiii : Sharp, Biol. Centr. Amer., Col., i (2), p. 88.
Ceratoderus, Mulsant, Mém. Acad. Lyon, i, 1851, p. (*nec* Westwood).
Sepidulum, Leconte, Trans. Amer. Ent. Soc., v, 1874, p. 47 : Sharp, Ent. Mon. Mag., xi, p. 247.

bullatus (*Sepidulum*), Sharp, Ent. Mon. Mag, xi, 1875, p. 249.
Hab. India.

Genus **HYDROCHUS.**

Leach, Zool. Misc., iii, 1817, p. 90 : Lacord., Gen. Col., i, p. 466 : Jacq. Duval, Gen. Col. Eur., i, p. 92 : Mun. Cat., p. 490 : Sharp, Biol. Centr. Amer., Col., i (2), p. 89.

binodosus, Motschulsky, Schrenck Reise, ii, 1860, p. 104.
Hab. India.

lacustris, Nietner, Jl. As. Soc. Ben., xxv, 1856, p. 537 : *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 386.
Hab. Ceylon.

latitans, Fairmaire, Ann. Soc. Ent. Fr., (6s.) viii, 1888, p. 337.
Hab. Tonkin.

opacus, Motschulsky, Schrenck Reise, ii, 1860, p. 103.
Hab. India.

violaceomicans, Motschulsky, *l. c.*, p. 103.
Hab. India.

SPHAERIDINI (*Sphéridiotes*):—Latreille, Fam. Nat., 1825, p. 366: (*Sphéridiides*,) Lacordaire, Gen. Col., i, 1854, p. 470: Leconte & Horn, Class. Col., p. 73.

Genus **CYCLONOTUM**.

Erichson, Käfer Mark Brand., i 1837, p. 212: Lacord., Gen. Col. i, p. 471: Mun. Cat., p. 495: *Monograph*, Mulsant, Ann. Soc. Agric. Lyon, 1844, p. 167: Jacq. Duval, Gen. Col. Eur., i, p. 94: Sharp, Biol. Centr. Amer. Col., i (2), p. 94: Leconte & Horn, Class. Col., p. 73.
Coelostoma, Brullé, Hist. Nat. Ins. Col., ii, 1835, p. 293 (*nom. praeoc., teste* Lacord., *l.c.*).

capense, Mulsant, *Mon.*, p. 170: Erichson, Wiegm. Arch., (2), 1845, p. 105.
Hab. Africa,? India.

hydrophiloides (*Sphaeridium*), MacLeay, Annul. Javan., 1825, p. 36.
Hab. Java [*Ind. Mus.*, Berhampur].

nitidum, Lap. de Casteln., Hist. Nat. Ins., Col., ii. 1850, p. 58.
Hab. Java.

Genus **DACTYLOSTERNUM**.

Wollaston, Ins. Mader., 1854, p. 99: Mun. Cat., p. 496: Fauvel, Rev. d' Ent., ii, p. 357: Sharp, Biol. Centr. Amer., Col., i (2), p. 95: Leconte & Horn, Class. Col., p. 73.

insulare (*Coelostoma*), Lap. de Casteln., Hist. Nat. Ins., Col., ii, 1850, p. 59.
abdominale, Wollaston, Col. St. Helena, 1877, p. 20.
Roussetii, Wollaston, Ins. Mader., 1854, p. 100, t. 3, f. 1.
Hab. S. Europe, Africa, St. Helena, Cape Verde Islands, Bourbon, Mauritius, Madagascar, India, New Caledonia.

rubripes, Boheman, Freg. Eug. Resa, Col., 1858, p. 24.
Hab. China, Philippines.

simplex, Sharp, Trans. Ent. S. Lond, 1874, p. 419.
Hab. Japan, China.

Genus **CERCYON**.

Leach, Zool. Misc., iii, 1817, p. 95: Brullé, Hist. Nat. Ins. Col., ii, p. 293: Lacord., Gen. Col., i, p. 473: Mun. Cat., p. 473: *Monograph*, Murray, Ann. Mag. N. H., xii, 1853, p. 73: Sharp, Biol. Centr. Amer., Col., i (2), p. 103, 109.
Trichopoda, Brullé, Hist. Nat. Ins., Col., ii, 1835, p. 294.

atriceps, Gemm. & Harold, Mun. Cat., 1868, p. 496.
nigriceps, Motsch., Bull. Mosc,, xxxvi (2), 1863, p. 445, (*nec* Marsh.).
Hab. Ceylon.

hydrophiloides, Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 445.
Hab. Ceylon.

lineolatus *(Trichopoda)*, Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 444.
Hab. Ceylon.

lunulatus, Gemm. & Harold, Mun. Cat., 1868, p. 497.
lunigerum, Motsch., Bull. Mosc., xxxvi (2), 1863, p. 444 *(nec* Mannerh.).
Hab. Ceylon.

rufotestaceus, Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 445.
Hab. Ceylon.

vicinalis, Walker, Ann. Mag. N. H., (3s.) iii, 1859, p. 258.
Hab. Ceylon.

Genus **SPHAERIDIUM**.

Fabricius, Syst. Ent., 1775, p. 66 : Ent. Syst., i, p. 77 : Syst. Eleuth., i p. 92 : Brullé, Hist. Nat. Ins. Col., ii, p. 291 : Lacordaire, Gen. Col., i, p. 472 : Jacq. Duval, Gen. Col. Eur., i, p. 95 : Mun. Cat., p. 499 : Leconte & Horn, Class. Col., p. 73.

dimidiatum, Gory, Ic. Régne Anim.., 1844, p. 73, t. 20, f. 15 : Lap. de Casteln., Hist. Nat., Col., ii, p. 60.
Hab. Java.

quinquemaculatum, Fabr., Syst. Eleuth., i, 1801, p. 94 : Lap. de Casteln., Hist. Nat. Col., ii, p. 60.
Hab. Java, [*Ind. Mus.*, S. India].

tricolor, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 209.
Hab. Ceylon.

vicinum, Lap. de Casteln. Hist. Nat. Ins., Col. ii, 1850, p. 60.
Hab. Java.

Genus **PACHYSTERNUM**.

Motschulsky, Bull. Mosc. xxxvi (2), 1863, p. 446 : Mun. Cat., p. 501.

apicatum, Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 448.
Hab. India.

nigrovittatum, Motschulsky, *l. c.*, p. 447, t. 9, f. 22.
Hab. Ceylon.

Genus **CRYPTOPLEURUM**.

Mulsant, Col. Fr. Palp., 1844, p. 188 : Lacord., Gen. Col., i, p. 475 : Mun. Cat., p. 501 : Sharp, Biol. Centr, Amer., Col., i (2), p. 115 : Leconte & Horn, Class. Col., p. 73.

sulcatum, Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 448.
Hab. Ceylon.

Family SILPHIDÆ.

Catalogue of the Insecta *of the Oriental Region*, No. 8. *Order* Coleoptera, *Family* Silphidæ.—*By* E. T. Atkinson, B. A.

The *Silphidæ* have the body depressed, the head more or less depressed and often posteriorly narrowed into a neck; mandibles exserted, strong; thorax orbicular or nearly so, forming a shield to the head, tarsi 5-jointed. They are known as scavenger beetles, and live on decomposing animal matter or fungi. They have been divided into the following sub-families by Leconte & Horn [1]:—

Posterior coxæ simple.

Anterior coxæ more or less tranverse at the base and with trochantin.

Anterior coxal cavities open behind.

Posterior coxæ contiguous. *Silphini.*

Posterior coxæ distant.

Anterior coxæ prominent: five ventral segments. *Lyrosomini.*

Anterior coxæ not prominent: six ventral segments. *Pinodytini.*

Anterior coxal cavities closed behind. *Anistomini.*

Anterior coxæ cylindro-conical, without trochantin, the cavities closed behind, often widely. *Cholevini.*

Posterior coxæ laminate.

Anterior coxæ with trochantin, the cavities closed behind. *Clambini.*

Dr. Reitter has also given a classification of the family, but it has not been generally received.[2]

The *Silphini*, *Cholevini*, and *Clambini* are alone represented in our Fauna, and but few species have, as yet, been described from the Oriental Region.

Family SILPHIDÆ.

Leach, Edinb. Encycl., 1815: Westwood, Mod. Class. Ins., i, 1839, p. 135: *(Silphales)* Lacordaire, Gen. Col., ii, 1854, p. 192: Jacq. Duval, Gen. Col. Eur., i, p. 101: Mun. Cat., p. 716: Leconte & Horn, Class. Col., p. 77: Matthews, Biol. Centr. Amer., Col., ii (i), 1887, p. 72.

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[1] Class. Col. N. America, Smithson. Misc. Coll., 1883, p. 78.

[2] Bestimmungs tabellen, in Verh. Ver. Brünn, xxiii, 1885, p. 3; *id.*, Wien Ent. Zeit., v, 1886, p. 313, 347; Deutsche Ent. Zeits., xxx, 1886, p. 219: see Fauvel, and Seidlitz, Deutsche Ent. Zeits., xxxi, 1887, p. 81.

Genus **NECROPHORUS.**

Fabricius *(Nicrophorus)*, Syst. Ent., 1775, p. 71 ; Spec. Ins., i, p. 83 : Mant. Ins., i, p. 48 ; Ent. Syst., i, p. 246 ; *(Necrophorus)* Syst. Eleuth., i, p. 333 : Lap. de Casteln., Hist. Nat., Col., ii, p. 1 : Lacord., Gen. Col., ii, p. 98 : Jacq. Duval & Fairm., Gen. Col. Eur., i, p. 101, t. 33, f. 161 : Mun. Cat., p. 717 : Kraatz, Deutsche Ent. Zeits., 1876, p. 352, 395 : Thibiat, Feuill. Nat., vi, p. 40 : Kiesenwetter, Isis, 1878, p. 124 : Reitter, Wien Ent. Zeit., vi, p. 85 : Schmidt, Feuill. Nat., xiv, p. 39 : Matthews, Biol. Centr. Amer., Col., ii (i), p. 90 : Leconte & Horn, Class. Col., p. 79.
Cyrtoscelis, Hope, Col. Man., iii, 1840, p. 149.

japonicus, Harold, Deutsche Ent. Zeits., xxi, 1877, p. 345 : Fairmaire, Ann. Soc. Ent. Fr., (5s.) viii, 1878, p. 89, t. 3, f. 5 : Lewis, Ann. Mag. N. H., (5s.) xx, p. 339.
Hab. Middle China, Japan.

nepalensis, Hope, Gray's Zool. Misc., 1831, p. 21 : Kraatz, Deutsche Ent. Zeits. 1877, p. 101 : Harold, *l. c.*, p. 346 : Dohrn, Stettin Ent. Zeit., xl, 1879, p. 459 : Lewis, Ann. Mag. N. H., (5s) xx, 1887, p. 340.
Hab. India, Nepal.

ocellatus, Fairmaire, Ann. Soc. Ent. Fr. (5s.) viii, 1878, p. 90.
Hab. Middle China.

Genus **PTOMASCOPUS.**

Kraatz, Deutsche Ent. Zeits., xxi, 1877, p. 102.

plagiatus (Ménétriés), Motschulsky, Et. Ent., iii, 1854, p. 27 : Kraatz, Deutsche Ent. Zeits, 1877, p. 102 : Bedel, Bull. Soc. Ent, Fr., (6s.) i, p. cii.
Davidis, Fairmaire, Ann. Soc. Ent. Fr., (5s.) viii, 1878, p. 91.
plagiatipennis, Lewis., Ann. Mag. N. H., (5s.) iv, 1879, p. 460.
quadrimaculatus, Kraatz, Deutsche Ent. Zeits., xxi, 1877, p. 104.
Hab. China, Kiukiang, Pekin, Mongolia, Japan.

Genus **NECRODES.**

Leach, Zool. Misc., ii, 1815, p. 87 : Lacord., Gen. Col., ii, p. 20, note : Mun. Cat., p. 720.
Asbolus, Voet, Cat. Col., 1806 : *teste* Reitt., Wien Ent. Zeit., vi, p. 85 : Bergroth, Berlin Ent. Zeit., xxviii, p. 229.
Diamesus, Hope, Col. Man., iii, 1840, p. 149.

osculans, Vigors, Zool. Journ., i, 1825, p. 537, t. 20. f. 2 : Lap. de Casteln., Hist. Nat., Col., ii p. 3.
Hab. India, Bengal [*Ind. Mus.* Silhat].

Genus **SILPHA.**

Linnaeus, Syst. Nat., 1758, p. 569 : Fabr., Syst. Ent., p. 72 ; Spec. Ins., i, p. 85 ; Mant, Ins., i, p. 48 ; Ent. Syst., i, p. 248 ; Syst. Eleuth., i, p. 330 : Gmelin, i (4), p. 1620 : Erichson, Käfer Mark Brand, ii, p. 226 : Lap. de Casteln., Hist. Nat., Col.,

ii, p. 4 : Lacord., Gen. Col., ii, p. 200 : Jacq. Duval, Gen. Col. Eur., i, p. 102, t. 33, f. 133 : Mun. Cat., p. 720 : Kraatz, Deutsche Ent. Zeits., 1876, p. 352 : Kiesenwetter, Isis, 1878, p. 124 : Karsch, Ent. Nachr., x, 1884, p. 221 : Reitter, Verh. Ver. Brünn., xxiii, p. 85 : Matthews, Biol. Centr. Amer. Col., ii (i), p. 94 : Leconte & Horn, Class. Col., p. 79.

Blitophaga, Reitter, Verh. Ver. Brünn., xxiii, 1885, p. 82.
Dendroxena, Motschulsky, Et. Ent., 1858, p. 125.
Necrobora, Hope, Col. Man., iii, 1840, p. 149.
Necrophila, Kirby, Faun. Bor. Amer., 1837, p. 102.
Oiceoptoma, Leach, Zool. Misc., iii, 1817, p. 74.
Parasilpha, Reitter, Verh. Ver. Brünn., xxiii, 1885, p. 76.
Peltis, Geoffroy, Ins. Paris., i, 1764, p. 117 : Reitter, Verh. Ver. Brünn, xxiii, p. 75.
Phosphuga, Leach, Zool. Misc., iii, 1817, p. 74.
Pseudopelta, Voet, Cat. Col., 1806 : Reitter, *l.c. supra*, p. 83.
Ptomaphila, Hope, Col. Man., iii, 1840, p. 149.
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Hab. India.

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Hab. India.

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Hab. Kashmir [*Ind. Mus.* N. India].

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Hab. India, Nepal.

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Hab. Tibet.

obscuriventris (*Oiceoptoma*), Motschulsky, Bull. Mosc., xlii (1), 1864, p. 349.
Hab. India.

rufithorax, Wiedemann, Zool. Mag., ii (1), 1823, p. 171 : Harold, Deutsche Ent. Zeits., xxi, 1877, p. 347.
chloroptera, Lap. de Casteln., Hist. Nat. Col., ii, 1850, p. 5. Cochinchina.
formosa, Lap. de Casteln., Ann. Soc. Ent. Fr., 1832, p. 400. China.
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Hab. India, Bengal, Poona, Nepal [*Ind. Mus.*, Sikkim].

subcaudata, Fairmaire, Ann. Soc. Ent. Belg., xxxii, 1888, p. 14.
Hab. Yunnan.

viridis, Motschulsky, Bull. Mosc., xxxiv (2), 1861, p. 628 ; *id.*, *ib.*, xlii (1), p. 349.
coelestis, Dohrn, Stettin Ent. Zeit., xxxvi, 1875, p. 81. Philippines.
superba, Kraatz, Deutsche Ent. Zeits., xx, 1876, p. 374. Philippines.
Hab. Philippines, Luzon, Manilla.

Genus **NODYNUS.**

Waterhouse, Trans. Ent. S. Lond., 1876, p. 12.

nitidus, Waterhouse, *l.c.*, p. 13.
Hab. India.

Genus **APATETICA.**

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Hab. Sumatra, Borneo.

lebioides (Hope), Westwood, Cab. Or. Ent., 1848, p. 86, t. 41, f. 9*a-c*.
Hab. Himálaya.

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Hab. Java.

Genus **CHOLEVA.**

Latreille, Précis Caract. Ins. 1796, p. 14 : Spence, Tran. Linn. S. Lond., xi, (1809) 1815, p. 133 : Jacq. Duval, Gen. Col. Eur., i, p. 105, t. 34, f. 170 : Kraatz, Stettin, Ent. Zeit., 1852 : Lacord., Gen. Col , ii, p. 209 : Murray, Ann. Mag. N. H., (2s). xviii, 1856, p. 4, 12 : Mun. Cat., p. 726 : Matthews, Biol. Centr. Amer., Col., ii (i) p. 98 : Leconte & Horn, Class. Col., p. 81.
Sciodrepa, Thomson, Skand. Col., i, p. 60 ; iv, p. 66, 1859.

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Hab. India.

Genus **CATOPSIMORPHUS.**

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Catopomorphus, Mun. Cat., p. 731.

flavicornis, Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 437.
Hab. Ceylon.

Genus **CLAMBUS.**

Fischer, Ent. Imp. Russ., i, 1820, Gen., p. 52 : Lacord., Gen. Col., ii, p. 222 : Jacq. Duval, Gen. Col. Eur., i, p. 113, t. 38, f. 188 : Mun. Cat., p. 740 : Matthews, Biol. Centr. Amer. Col., ii (i), p. 73 : Leconte & Horn, Class. Col., p. 83.
Sternuchus, Leconte, Agassiz Lake Sup., 1850, p. 222.

pumilus, Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 480.
Hab. Ceylon.

Family **CORYLOPHIDÆ.**

Catalogue of the Insecta *of the Oriental Region*, No. 9. *Order* Coleoptera, *Family* Corylophidæ—*By* E. T. Atkinson, B. A.

Matthews places this family close to the Silphidæ, but would separate *Aphanocephalus* as a distinct family (*Pseudocorylophidæ*) to be placed near the Coccinellidæ. Leconte observes that 'the wings fringed with long hairs give this family a certain affinity with the Trichopterygidæ, while the loose antennal club, and the comparatively small size of the fourth joint from the end, in several genera, show an unmistakeable resemblance to *Anisostoma*, and other small Silphidæ. The form of the mandibles and the structure of the tarsi, however, distinguish this family from all allies.' Jacquelin Duval, forms two groups :—*Corylophini* in which the head is entirely hidden beneath the anterior margin of the pronotum, broadly rounded and dilated in front; more or less rounded before the eyes. *Orthoperini* in which the head is more or less exposed in front of the anterior margin of the pronotum which is more or less emarginate; abruptly contracted before the eyes. In his description of the species of the family that occur in Central America (Biol. Centr. Amer., Col., ii (i), p. 12) Matthews forms several tribes that need not be noticed here.

Family **CORYLOPHIDÆ.**

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Clypéastrides, Jacq. Duval, Ann. Soc. Ent. Fr., (3s.) v, 1857, p. 98 : *(Clypeastres)* Redtenbacher, Fauna Austr., *ed.* 1, p. 572.

Genus **SACIUM.**

Leconte, Proc. Acad. Nat. Sci., Philad., vi, 1852, p. 144 ; Class. Col., 1883, p. 113 : Jacq. Duval, Gen. Col. Eur., ii, p. 230, t. 56, f. 277 : Matthews, Biol. Centr. Amer., Col., ii (i) p. 108.

?= *Clypeaster*, Latreille, Règne Anim., 2 *ed.*, v, 1829, p. 162 : Mun. Cat., p. 3820.

bifasciatum, Motschulsky, Et. Ent., vii, 1858, p. 122.
Hab. India.

convexiusculum, Motschulsky, *l.c.*, p. 122.
Hab. India.

indicum, Motschulsky, *l.c.*, p. 122.
Hab. India.

luridum, Motschulsky, Bull, Mosc., xxxix (2), 1866, p. 426.
Hab. Ceylon.

picipenne, Motschulsky *l.c.*, p. 426.
Hab. Ceylon.

unifasciatum, Motschulsky, Et. Ent., vii, 1858, p. 121.
Hab. India.

Genus **ARTHROLIPS**.

Wollaston, Ins. Mader., 1854, p. 475 : Jacq. Duval, Gen. Col. Eur., ii, p. 231, t. 56, f. 279 : Mun. Cat., p. 3819 : Leconte & Horn, Class. Col., 1883, p. 113.

bimaculatus, Matthews, Ann. Mag. N. H., (5s.) xix, 1887, p. 106.
Hab. Burma.

croceus, Matthews, *l.c.*, p. 107.
Hab. Siam.

flavicollis, Matthews, *l.c.*, p. 107.
Hab. Java.

rotundatus, Matthews, *l.c.*, p. 106.
Hab. Borneo.

semipunctatus, Matthews, *l.c.*, p. 107.
Hab. Java.

suffusus, Matthews, *l.c.*, p. 106.
Hab. China.

Genus **GLOESOMA**.

Wollaston, Ins. Mader., 1865, p. 480 : Mun. Cat., p. 3819.
Moronillus, Jacq. Duval., Bull. Soc. Ent. Fr., 1854, p. 37 : *id.*, Gen. Col., ii, p. 234.
? = *Rhypobius*, Leconte, Proc.-Acad. Nat. Sci. Philad. vi, 1852, p. 42 ; Leconte & Horn, Class. Col., 1883, p. 113.

orientale (*Moronillus*), Motschulsky, Bull. Mosc., xxxix (2), 1866, p. 427.
Hab. Ceylon.

Genus **SERICODERUS**.

Stephens, Ill. Brit. Ent., ii, 1829, p. 188 : Jacq. Duval, Gen. Col. Eur., ii, p. 232 : Mun. Cat., p. 3819 : Leconte & Horn, Class. Col., p. 113 ; Matthews, Biol. Centr. Amer., Col., ii (i), p. 117.
Gryphinus, Redtenbacher, Fauna Austriaca, 1849, p. 50.

infuscatus, Motschulsky, Bull. Mosc., xxxix (2), 1866, p. 426.
Hab. Ceylon.

Genus **PELTINUS**.

Mulsant, Opusc. Ent., xii, 1861, p. 137 : Mun. Cat., p. 3820.

orientalis, Matthews, Ann. Mag. N. H., (5s.) xix, 1887, p. 109.
Hab. Java.

Genus **CORYLOPHODES.**

Matthews, Ent. Mon. Mag., xxii, 1885, p. 60.

unicolor, Matthews, Ann. Mag. N. H., (5s.) xix, 1887, p. 109.
Hab. Java.

Genus **CATOPTYX.**

Matthews, Ann. Mag. N. H., (5s.) xix, 1887, p. 111.

Bowringii, Matthews, *l.c.*, p. 112.
Hab. Java.

Genus **APHANOCEPHALUS.**

Wollaston, Ent. Mon. Mag., ix, 1873, p. 278.

dissimilis, Matthews, Ann. Mag. N. H., (5s.) xix, 1887, p. 115.
Hab. China.

quadrimaculatus, Matthews, *l.c.*, p. 114.
Hab. Penang.

vitreus, Matthews, *l.c.*, p. 114.
Hab. China.

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? alutaceum *(Sacium)*, Matthews, *l. c.* p. 106.
Hab. Maldonado.

Family **SCYDMÆNIDÆ.**

Catalogue of the Insecta *of the Oriental Region. Order* Coleoptera, No. 10, *Family* Scydmænidæ—*By* E. T. Atkinson, B. A.

The *Scydmænidæ* are small, shining insects, usually ovate, of a brown colour, more or less clothed with erect hairs. It is only of late years that many have been recorded from the Oriental Region. Schaufuss, in 1866, gave the bibliography up to that date in his Monograph. In 1882, Reitter sub-divided the family into five tribes:—*Chevrolatini*, *Cephenini*, *Scydmaenini*, *Eumicrini*, and *Mastigini*, and, since then, has suggested that the name *Eumicrus*, Lap., should be changed into *Scydmaenus*, whilst for the *S. Godartii* series to which that name had been applied, the name *Cyrtoscydmus* Motsch., should be used. This proposal has not received such acceptance as to warrant its adoption here. The insects of this family are found near water, under stones, in ants' nests and under bark, and occasionally flying in the dusk. Leconte notices that the *Scydmænidæ* differ from the *Pselaphidæ*, to which they are closely allied, by the long elytra and the conical distant posterior coxæ. The Indian Museum does not possess any specimens from the Oriental Region.

The following undescribed species of Motschulsky have been omitted from this Catalogue :—

Eumicrus glabriculus, Bull. Mosc., xlii (i), 1869, p. 258, Ceylon.
Scydmaenus incrassatus, *l. c.*, p. 264. India.
" *longipalpis*, *l. c.*, p. 268. India.
" *quadrifoveolatus*, *l. c.*, p. 266. India.
" *subangulosus l. c.*, p. 264. India.

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Bull. Mosc., 1827, p. 120 ; xviii, 1845, p. 48 ; xxvi (4), 1851, p. 502 ; xxxvi (2), 1863, p. 425 ; xlii (1), 1869, p. 252.
Etudes Entomologiques, i, 1853, p. 18 ; iii, 1854, p. 4 ; iv, 1855, p. 14 ; v, 1856, p. 26 ; vi, 1857, p. 57 ; vii, 1858, p. 29 ; viii, 1859, p. 131.

Reitter E. :—
'Scydmæniden Fauna von Java und Borneo' in Verhandlungen der Kaiserlich-Königlichen Zoologisch-botanischen Gesellschaft in Wien, xxxii, 1882, p. 283 ; *ib.*, xxxiii, p. 387.
Bestimmungs-tabellen der Europäischen Coleopteren, v, *l.c.*, xxxi, p. 543.

Schaufuss, L. W. :—
Mon.-'Monographie der Scydmaeniden Central und Südamerika' in Novorum Actorum Academiæ Caesareae Leopoldino-Carolinae Germanicae Naturae Curiosorum, xxxiii (4 dec : iv), Dresden, 1866.
Die Scydmaeniden Nord. Ost Africa's, der Sunda-Inseln und New Guinea's, in Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 387. With this may be read 'Bemerkungen' by E. Reitter, in Deutsche Ent. Zeits., 1885, p. 152.
'Neue Scydmaeniden,' in Deutsche Ent. Zeits., xxxiii, 1889, p. 1.

Schaum, R :—
Analecta Entomologica. Halle, 1841, and also as 'Symbolæ ad monographiam Scydmænorum Insectorum generis.'

Family **SCYDMAENIDÆ.**

Leach, Edinb. Encyc., 1815 : Westwood, Mod. Class. Ins., i, 1839, p. 279 : Lacord., Gen. Col., ii, p. 183 : Jacq. Duval, Gen. Col. Eur., i, p. 119 : Schaufuss, *Mon.*, 1886, p. 27 ; Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 387 : Reitter, Ins. Deutschl., iii, 1882, p. 140 : Leconte & Horn, Class. Col., 1883, p. 83 : Sharp, Biol. Centr. Amer., Col., ii (i), 1887, p. 46.

Genus **CEPHENNIUM.**

Müller & Kunze, Monograph. Schrift. Ges. Leips., i, 1822, p. 188 : Lacord., Gen. Col., ii, p. 188 : Jacq. Duval, Gen. Col. Eur., i, p. 122, t. 39, f. 193 : Motschulsky, Bull. Mosc., xlii (i), 1869, p. 270 : Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 543, 547 : Leconte & Horn, Class. Col., p. 84.

Cephennarium, Reitter, Verh. Zool. Wien, *l.c. supra*, p. 554.
Geodytes, Saulcy, Ann. Soc. Ent. Fr., (4s.) iv, 1864, p. 256 : Mun. Cat., p 714 : Reitter, *l.c.*, p. 551.

Megaladerus, Stephens, Ill. Brit. Ent., v, 1835, App. p. 428 : King ; Motschulsky ; Reitter, *l.c.*, p. 547.
Microdema, Lap. de Casteln., Hist. Nat., Col., i, 1840, p. 209.
Nanophthalmus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 506 : Reitter, *l.c.*, p. 554.

festivum, Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 27.
Hab. Singapur.

ovatum (*Scydmaenus*), Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 553 ; *id.*, Ann. Mag. N. H., (2s.) xx, 1857, p. 189 : Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 394.
breviusculus, Motschulsky, Et. Ent., vii, 1858, p. 32.
Hab. Ceylon, Nuwara Eliya.

Raffrayii, Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 29.
Hab. Singapur.

Genus **CEPHENNODES.**

Reitter, Verh. Zool. bot. Ges, Wien, xxxiii, 1883, p. 420.

Simonis, Reitter, *l.c.*, p. 421.
Doriae (*Cephennium*), Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 422.
Hab. Borneo, Tameangleiang.

Genus **EUCONNUS.**

Thomson, Skand. Col., iv, 1862, p. 88 : Schaufuss, *Mon.*, 1866, p. 29 : Reitter, Ins. Deutschl., iii, (2), 1882, p. 178 ; Verh. Zool bot. Ges. Wien, xxxi, 1881, p. 572 ; *ib.* xxxii, p. 298; xxxiii, p. 421 : Sharp, Biol. Centr. Amer., Col., ii, 1887, p. 47.
subg. *Leptocharis*, Reitter, Deutsche Ent. Zeits., 1887, p. 275.
„ *Napochus*, Thomson. Skand. Col., i, p. 67 ; iv, p. 87, 1859 : Reitter, Verh. Wien, *l.c. supra*, p. 573.
„ *Tetramelus*, Motschulsky, Bull. Mosc., xlii (1), 1869, p. 257 : Reitter, *l.c. supra*, p. 578.

angusticeps (*Scydmaenus*), Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 543 ; Ann. Mag. N. H., (2s.) xx, p. 189 : Schaufuss. Nunq. Otios., iii, p. 560.
latipennis (*Scydmaenus*), Motschulsky, Et. Ent., vii, 1858, p. 29.
Hab. Ceylon.

batavianus, Reitter. Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 299.
Hab. Batavia.

bradypodus (*Scydmaenus*), Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1884, p. 391, 402.
Hab. Borneo, Sarawak.

Charon, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 423.
Hab. Borneo, Telang.

cinnamomeus *(Scydmaenus)*, Schaum, Analect. Ent. Symb., 1841, p. 21.
Hab. India, Bengal.

clavigeroides *(Napochus)*, Reitter, *l.c. supra*, xxxiii, 1883, p. 423.
Hab. Borneo, Telang.

crassiceps, Reitter, *l.c.*, xxxii, 1882, p. 301 : Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, p. 389.
Hab. Batavia.

dichrous, Reitter, *l.c. supra*, xxxii, 1882, p. 301 : Schaufuss, *l.c. supra*, p. 389.
Hab. Borneo, Tumbang Hiang.

discedens, Reitter, *l.c. supra*, xxxiii, 1883, p. 424.
Hab. Borneo, Telang.

dolosus, Reitter, *l.c. supra*, xxxii, 1882, p. 300.
Hab. Batavia.

eumicroides, Reitter, *l.c.*, xxxiii, 1883, p. 424.
Hab. Borneo, Telang.

extensicornis *(Scydmaenus)*, Motschuslky, Bull. Mosc., xxxvi (2), 1863, p. 429 ; *ib.* xlii (i), p. 267.
Hab. Ceylon.

fallax, Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 302 : Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, p. 389.
Hab. Batavia.

favorabilis, Reitter, *l.c. supra*, xxxiii, 1883, p. 424.
Hab. Borneo, Tameangleiang.

flavidulus *(Scydmaenus)*, Motschulsky, Bull. Mosc., xxiv (4), 1857, p. 505 ; *ib.* xlii (i), p. 268.
Hab. India.

fractionis, Schaufuss, Ann. Mus. Civ. Cen., (2s.) i, 1883, p. 389, 395.
Hab. Borneo, Sarawak.

glandulicornis *(Scydmaenus)*, Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 428 ; *ib.*, xlii (i), p. 267.
Hab. Ceylon.

glanduliferus, Nietner, Jl. As. Soc. Ben., xxv, 1856, p. 551 ; *id.*, Ann. Mag. N. H. (2s.) xx, 1857, p. 187 ; Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 390.
Nietnerii, Motschulsky, Et. Ent., vii, 1858, p. 30.
Hab. Ceylon.

globiceps, Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 300 : Schaufuss, *l.c. supra*, p. 390.
Hab. Borneo, Tambang Hiang.

graminicola, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 551 ; *id.*, Ann. Mag. N. H., (2s.) xx, 1857, p. 188 : Schaufuss, *l.c. supra*, p. 389.
falsatus, Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 301.
Hab. Ceylon, Batavia.

grandis, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 50.
Hab. India.

laevissimus, Motschulsky, *l.c.*, p. 504.
Hab. India.

longipilis (*Napochus*), Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 299.
Hab. Batavia.

luculus (*Napochus*), Reitter, Verh. *l.c.* xxxiii, 1883, p. 423.
Hab. Java.

megamelas (*Scydmaenus*), Walker, Ann. Mag. N. H., (3s.) iii, 1859, p. 52.
Hab. Ceylon.

nigripalpis, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 389, 395.
Hab. Borneo, Sarawak.

nigritulus, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 426.
Hab. Borneo, Telang.

pilicollis (*Scydmaenus*), Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 505; *ib.*, xlii (i), p. 268.
Hab. India.

pubescens, Nietner, Jl. As. Soc. Ben., xxv, 1856, p. 550; *id.*, Ann. Mag. N. H., (2s.) xx, 1857, p. 186.
Hab. Ceylon.

pygmaeus, Nietner, Jl., *l.c.*, p. 550; *id.*, Ann., *l.c.*, p. 187: Motsch., Bull. Mosc., xlii (i), p. 266.
Hab. Ceylon.

pyriformis, Nietner, Jl. *l.c.*, p. 552; *id.*, Ann. *l.c.*, p. 188: Schaufuss, Tijds. v. Ent. xxv, 1882, p. 75; *id.*, Notes Leyden Mus., iv, p. 156; Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 390, 394.
brunnipennis, Motschulsky, Et. Ent., vii, 1858, p. 30; *id.*, Bull. Mosc., xxxvi (2), 1863, p. 428; *ib.*, xlii (i), p. 265.
Hab. Ceylon, Java, Sumatra, Celebes.

quinquefoveolatus (*Scydmaenus*), Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 427.
? = *pyriformis*, *q. v.*
Hab. Ceylon.

rufescens (*Scydmaenus*), Motschulsky, *l.c.*, xxiv (4), 1851, p. 504; *ib.*, xlii (i), p. 264.
? = *pyriformis*, *q.v.*
Hab. India.

seminudus, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 390, 398.
Hab. Bali.

semisulcatus, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 425.
Hab. Batavia, Pengaron.

simulator, Reitter, *l.c.*, xxxii, 1882, p. 302: Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 389.
Hab. Java, Batavia.

singalanensis, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 390, 401.
Hab. Sumatra.

sparsulus. Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 425.
Hab. Java, Batavia, Barabei.

telangensis, Reitter, *l.c.*, xxxiii, 1883, p. 425.
Hab. Borneo, Telang.

tetratoma, Reitter, *l.c.*, xxxii, 1882, p. 300.
Hab. Borneo, Tumbang Hiang.

transversicornis (*Scyamaenus*), Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 426 : (*Tetramelus*) *id.*, *l.c.*, xlii (i)., p. 257.
Hab. Ceylon.

trichocerus (*Scydmaenus*), Motschulsky, *l.c.*, xxiv (4), 1851, p. 504; *ib.*, xlii (i), p. 265.
Hab. India.

trinodis (*Scydmaenus*), Motschulsky, Et. Ent., vii, 1858, p. 32 ; *ib.*, xlii (i), p. 266.
Hab. Ceylon.

villosus (*Scydmaenus*), Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 504 ; *ib.*, xlii (i), p. 267.
Hab. India, Bombay.

Genus **ELACATAPHORA**.

Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 403.

robusta, Schaufuss, *l.c*, p. 391, 404.
Hab. Java.

Genus **EUMICRUS**.

Lap. de Casteln., Hist. Nat. Ins. Col., i, 1840, p. 209 : Lacord., Gen. Col., ii, p 187 ; Jacq. Duval, Gen. Col. Eur., i, p. 120, t. 39, f. 192 : Motsch., Bull. Mosc., xlii (i), 1869, p. 257 : Reitter, Ins. Deutsch., iii (2), p. 194 : Sharp, Biol. Centr. Amer., Col., ii, p. 64 : Schaufuss, *Mon.*, p. 30 ; *id.*, Berlin. Ent. Zeit., xxxi, 1887, p. 316 : Leconte & Horn, Class. Col., p. 84 : Sharp, Biol. Centr. Amer., Col., ii (i), 1887, p. 64.

subg. { *Eumicrus*, Laporte de Casteln., *l.c. supra* : Reitter, Verh. Zool. bot. Ges. Wien, xxxi, p. 581 ; Wien Ent. Zeit. vi, p. 140 : type, *tarsatus*, Müller & Kunze, 1822.
Microstemma, Motschulsky, Et. Ent., 1857, p. 57 ; Bull. Mosc., xlii (i), 1869, p. 259.

subg. *Eustemmus*, Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 582 ; Wien Ent. Zeit. vi, 1887, p. 141 : type *Olivieri*, Reitter, Wien Ent. Zeit, *l.c.*

subg. { *Scydmaenus*, Reitter, Wien Ent. Zeit. *l.c.*, p. 143 : type, *Hellwigii* Fabr.
Cholerus Thomson, Skand. Col., iv, 1862, p. 77. type, *rufus*, Müller & Kunze.
Heterognathus, King, Trans. Ent. S. N. S. Walen, i, 1864, p. 91 : Reitter, Verh Zool. bot. Ges. Wien, xxxi, p. 583.

? *Cyrtoscydmus*, Motschulsky, Bull. Mosc., xlii (i), 1869, p. 260 : Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 567.

Pseudomicrus, Motschulsky, *l.c.*, xxxvi (2), 1863, p. 425 ; *ib.*, xlii (i), 1869, p. 258.

? *Stenichnus*, Thomson, Skand. Col., i, 1859, p. 61 ; iv, p. 85 : Reitter, Verh. Wien, *l.c. supra*, p. 570.

[Motschulsky (in 1869) proposed the Genus *Cyrtoscydmus* for those species of *Scydmaenus* that have narrow, indistinctly toothed, falciform mandibles, feebly clavate antennæ and apterous females, and compared with the true *Scydmaenus*, a generally less angular form, more strongly punctured and more evenly pubescent surface; a cordate thorax, more convex in front, with large basal foveolæ, and anterior tibiæ more or less triangularly dilated (type. *S. Godartii*, Latreille).]

advolans, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 549 ; Ann. Mag. N. H., (2s.) xx, p. 185.
Hab. Ceylon.

agilis, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 427 : Schaufuss, Ann. Mus. Civ., Gen., (2s.) i, 1883, p. 393.
Hab. Borneo, Tameangleiang.

alatus, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 543 ; Ann. Mag. N. H., (2s.) xx, p. 180 : Schaufuss, Nunq. Ot., iii, p. 562.
Hab. Ceylon.

aurifer (*Scydmaenus*), Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 41.
Hab. Singapur.

birmanicus (*Eumicrus*), Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 504 : *id.* (*Microstoma*), *l.c.*, xli (i), 1869, p. 260.
Hab. India.

capillaris (*Cyrtoscydmus*), Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 20.
Hab. Singapur.

centurionis (*Cyrtoscydmus*), Schaufuss, *l.c.*, p. 11.
Hab. Singapur.

ceylanicus, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 545 ; *id.*, Ann. Mag., N. H., (2s.) xx, p. 182 : Schaufuss, Nunq. Otios., iii, p. 562.
crassicornis, Motschulsky, Et. Ent., vii, 1858, p. 29 ; Bull. Mosc., xlii (i), p. 258.
Hab. Ceylon.

cohaerens, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 392, 409.
Hab. Borneo.

concinnatus (*Cyrtoscydmus*), Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 12.
Hab. Singapur.

conifer (*Cyrtoscydmus*), Schaufuss, *l.c.*, p. 16.
Hab. Singapur.

convexus, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 393, 415.
Hab. Borneo.

cyrtocerus (*Scydmaenus*), Motschulsky, Et. Ent., vii, 1858, p. 31 : *id.*, Bull Mosc., xlii, (i), p. 267.
Hab. Ceylon.

declinatus, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 427 : Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 393.
Hab. Borneo, Tameangleiang.

diversepilosus, Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 42.
Hab. Singapur.

Doriæ, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1884, p 419.
Hab. Sumatra.

epopsimus, Schaufuss, Tijds. v. Ent., xxv, 1882, p. 74 ; Notes Leyden Mus., iv, p. 155.
Hab. Batavia.

extensionis (*Scydmaenus*), Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 40.
Hab. Singapur.

femineus (*Cyrtoscydmus*), Schaufuss, *l.c.*, p. 3.
Hab. Singapur.

femoralis, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 544 ; *id.*, Ann. Mag. N. H., (2s.) xx, 1857, p. 182 : Schaufuss, Nunq. Otios., iii, p. 562.
Hab. Ceylon.

filicornis, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 393, 414.
Hab. Java.

frontalis, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 426.
Hab. Borneo, Tameangleiang.

glandulifer (*Cyrtoscydmus*), Deutsche Ent. Zeits., xxxiii, 1889, p. 14.
Hab. Singapur.

intermedius, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 546 ; *id.*, Ann. Mag. N. H., (2s.) xx, p. 183 : Schaufuss, Nunq. Otios., iii, p. 562.
Hab. Ceylon.

laborator (*Cyrtoscydmus*), Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 13.
Hab. Singapur.

lanuginosus, Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 302 : Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 393.
Hab. Borneo, Tambang Hiang.

longicornis, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 503 ; (*Pseudomicrus*) *ib.*, xli (i), p. 259.
Hab. India.

mantëioranus, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 392, 408.
Hab. Borneo, Sumatra.

obtusus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 503 ; *id.*, *l.c.*, xlii (1), p. 258.
Hab. India.

ocularis (*Cyrtoscydmus*), Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 12.
Hab. Singapur.

ovicollis, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 392, 410.
Hab. Singapur.

pilipennis (*Pseudomicrus*), Motsch., Bull. Mosc., xxxvi (2), 1863, p. 425 : Reitter, Wien Ent. Zeit., i, 1882, p. 139.
Hab. Ceylon.

plutus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 504 ; (*Pseudomicrus*) *ib.*, xli (i), p. 259.
Hab. India, Bengal.

potior, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1884, p. 427.
Hab. Borneo, Telang.

procer (*Scydmaenus*), Motschulsky, Et. Ent., vii, 1858, p. 30 ; *id.*, Bull. Mosc., xlii (i), p. 266.
Hab. Ceylon? Columbia?

pselaphoides, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 547 ; *id.*, Ann. Mag. N. H., (2s.) xx, 1857, p. 184 : Schaufuss, Nunq. Otios., iii, p. 562.
Hab. Ceylon.

pudicus (*Cyrtoscydmus*), Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 6.
Hab. Singapur.

pumilio (*Cyrtoscydmus*), Schaufuss, *l.c.*, p. 5.
Hab. Singapur.

regularis (*Scydmaenus*), Schaufuss, *l.c.*, p. 41.
Hab. Singapur.

rugulus (*Cyrtoscydmus*), Schaufuss, *l.c.*, p. 5.
Hab. Singapur.

Reitterii, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 392, 407.
Hab. Java.

sericeicollis, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 503 ; (*Pseudomicrus*) *ib.*, xli (i), p. 259.
Hab. India.

similis (*Scydmaenus*), Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 39.
Hab. Singapur.

simulus, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1884, p. 427.
Hab. Borneo, Telang.

subsimilis, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 393, 415.
Hab. Borneo, Sarawak.

tenuicornis, Schaufuss, *l.c.*, p. 393, 416.
Hab. Java.

timendus (*Cyrtoscydmus*), Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 4.
Hab. Singapur.

uncinatus, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 393, 419.
Hab. Sumatra.

vittatus (*Cyrtoscydmus*), Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 11.
Hab. Singapur.

Genus **HORAEOMORPHUS.**

Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 21.

eumicroides, Schaufuss, *l.c.*, p. 21.
Hab. Singapur.

Genus **SYNDICUS.**

Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 502 : *id*, xlii (1), 1869, p. 259 : Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 404.

paeninsularis, Schaufuss, Deutsche Ent. Zeits., xxxiii, 1889, p. 22.
Hab. Singapur.

pilicornis, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 503 : Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 391.
principulus, Schaufuss, Hor. Ent. Ross., xxi, 1887, p. 114.
Hab. Sumatra.

sumatrensis, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 391, 405.
Hab. Sumatra, Mt. Singalan.

Genus **GLANDULARIA.**

Schaufuss, Deutsche Ent. Zeits., xxxiii, 1879, p. 3.

appendiculata, Schaufuss, *l.c.*, p. 25.
Hab. Singapur.

Erichsonii, Schaufuss, *l.c.*, p. 24.
Hab. Singapur.

fricatoris, Schaufuss, *l.c.*, p. 23.
Hab. Singapur.

interrupta, Schaufuss, *l.c.*, p. 26.
Hab. Singapur.

quadrifoveolata, Schaufuss, *l.c.*, p. 25.
Hab. Singapur.

Genus **CLIDICUS.**

Lap. de Casteln., Ann. Soc. Ent. Fr., 1832, p. 396 : Lacord., Gen. Col., ii, p. 189 : Mun. Cat., p 715 : Reitter, Wien Ent. Zeit., vi, 1887, p. 64, 303.

formicarius, Pascoe, Jl. Ent., ii (1863), 1866, p. 28, t. 2, f. 3 : Reitter, Wien. Ent. Zeit., vi, p. 64, 303.
? Doriae, Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 394, 419.
Hab. Java, Sumatra.

grandis, Lap. de Casteln., Ann. Soc. Ent. Fr., 1832, p. 397; *id.*, Etud. Ent., i, 1834, p. 138 : Fairmaire, Ann. Soc. Ent. Fr., 1856, p. 529 : Lacord. Gen. Col, ii, p. 189, Atlas, t. 16, f. 4 : Gestro, Ann. Mus. Civ. Gen., xii, p. 145, 147, fig. : Reitter, Wien Ent. Zeit., vi, p. 304.
Ganglbaueri, Reitter, Wien Ent. Zeit., vi, 1887, p. 64.
Hab. Borneo, Java.

monstrosus, *(Erineus)* Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 206.
Hab. Ceylon.

taphrocephalus, R. Gestro, Ann. Mus. Civ. Gen., xii, 1878, p. 144, fig.: Reitter, Wien Ent., Zeit., vi, p. 303.
grandis, Reitter, *l.c.*, p. 64 (*nec* Casteln.).
Hab. Borneo, Sarawak.

Genus **AGATHELOR**.

Schaufuss, Ann. Mus. Civ. Gen., (2s.) i, 1883, p. 420.

brevitarse, Schaufuss, *l.c.*, p. 394, 421.
Hab. Borneo.

deplanatum, Schaufuss, *l.c.*, p. 394, 421.
Hab. Borneo.

Family **PSELAPHIDÆ**.

Catalogue of the Insecta *of the Oriental Region*, No. 11. *Order* Coleoptera, *Family* Pselaphidæ.—*By* E. T. Atkinson, B. A.

Leconte describes the *Pselaphidæ* as comprising a number of very small insects, not exceeding one-eighth of an inch in length, of a chestnut-brown colour, usually slightly pubescent: the head and thorax are most frequently narrower than the elytra and the abdomen, the latter is convex, and usually obtuse at the apex. Many are found flying at twilight, others in ants' nests, or under stones or bark. The general form is that of the *Scydmaenidæ* from which the *Pselaphidæ* are distinguished by the truncate, short elytra that leave a part of the abdomen exposed, and the narrow, transverse, usually not contiguous, posterior coxæ. Dr. L. W. Schaufuss[1] distributed the genera into six groups arranged according to the number of the antennal joints:—*Articerides, Adranides, Goniastides, Clavigerides, Cyathigerides* and *Pselaphides*. This arrangement was reviewed by Dr. E. Reitter,[2] in 1882, who formed five sub-families, *Ctenistini, Batrisini, Bryaxini, Pselaphini* and *Euplectini*. Leconte & Horn,[3] give two sub-families, *Clavigerinæ* and *Pselaphinæ*, the latter of which is again sub-divided into groups.

List of principal works quoted.

Aube, C.:—
Monographie des Psélaphiens, Rev. Mag. Zool. 1834.
'Note sur la famille des Psélaphiens,' in Ann. Soc. Ent. Fr., ii, 1833, p. 502.
Révison de la famille des Psélaphiens, in Ann. Soc. Ent. Fr., (2s.) ii, 1834, p. 73.

[1] Nunquam Otiosus, ii, 1872, p. 213.
[2] Ins. Deutschl., iii, 1882, p. 10: Verh. Ver. Brünn, xx, 1882, p. 177.
[3] Class. Col., 1883, p. 35.

King, R. L. :—
On the Pselaphidæ of Australia, in Trans. Ent. S. N. S. Wales, i, 1864, p. 37, 102.

MOTSCHULSKY, V. :—
Enumération des nouvelles espèces des coléopteres rapportés de son voyage, in Bulletin de la Société Impériale des Naturalistes de Moscou, xxiv (4), 1851, p. 479.

In this paper there are numerous species either undescribed, or imperfectly described, and which are therefore omitted from this catalogue. Some have the letters 'M P' attached to them which stand for 'Museum of Prague,' and it is stated that M. Dornietzer would subsequently describe the species so marked, but I have not been able to trace any reference to the promised descriptions. I have admitted as good some species subsequently identified, and have omitted the following though recorded in the Munich catalogue :—

Acmæonotus Motschulskyi, Bull. Mosc., *l.c.*, p. 483.——?
Batrisus armiger, *l.c.*, p. 485. Bengal.
,, *bryaxoides*, *l.c.*, p. 484. Bengal.
,, *bucephalus*, *l.c.*, p. 487. India.
,, *Dennyi*, *l.c.*, p. 487. India.
,, *excavatus*, *l c.*, p. 485. Bengal.
,, *femoralis*, *l.c.*, p. 487. India.
,, *fossulatus*, *l.c.*, p. 489. Bengal.
,, *foveicollis*, *l.c.*, p. 488. Bengal.
,, *grandis*, *l.c.*, p. 489. India.
,, *Helferi*, *l c.*, p. 489. India.
,, *Lecontei*, *l.c.*, p. 486. India.
,, *macrocerus*, *l.c*, p. 487. India.
,, *mucronatus*, *l.c.*, p. 485. India.
,, *nitidulus*, *l c.*, p. 486. India.
,, *nodifrons*, *l.c*, p. 485. India.
,, *nodosus*, *l c*, p. 486. Bengal.
,, *pexus*, *l c.*, p. 489. Bengal.
,, *piliferus*, *l c.*, p. 484. Bengal.
,, *puncticollis*. *l c*, p. 485. India.
,, *Reichenbachii*, *l.c.*, p. 486. India.
,, *sculpticollis*, *l.c.*, p. 489. India.
,, *spiniventris*, *l.c.*, p. 486. Bengal.
,, *ventralis*, *l.c.*, p. 484. India.
Bryaxis brevicornis, *l.c.*, p. 493. India.
,, *castanoptera*, *l.c.*, p. 491. Calcutta.
,, *clavata*, *l.c.*, p. 491. Calcutta.
,, *crassicornis*, *l.c.*, p. 492. (*nec* Broun) Calcutta.
,, *decorata*, *l.c.*, p. 494. India.
,, *dilatata*, *l.c.*, p. 492. India.
,, *extensa*, *l.c.*, p. 494. India.
,, *indistincta*, *l.c.*, p. 491. Bengal.
,, *lata*, *l.c.*, p. 491. Calcutta.

Bryaxis simplex,	*l.c.*,	p.	491.	India.
,, *suturella*,	*l.c*,	p.	491.	India.
Centrophthalmus, Horsfieldii,	*l.c.*	p.	479.	Bombay.
,, *longicornis*,	*l.c.*,	p.	480.	India.
,, *orbicollis*,	*l.c.*,	p.	480.	India.
,, *pilosus*,	*l c.*,	p.	480.	India.
,, *thoracicus*,	*l c.*,	p	480.	India.
Claviger Hageni,	*l c.*,	p.	502.	——?
Ctenistes angusticollis,	*l.c.*,	p.	481.	India.
,, *costulalus*,	*l.c.*,	p.	481.	India.
,, *hindustanus*,	*l.c.*,	p.	481.	Bombay.
,, *longicornis*,	*l.c.*,	p.	481.	India.
Euplectus elongatus,	*l.c.*,	p.	501.	India.
,, *pulcher*,	*l.c.*,	p.	499.	India.
,, *Westwoodi*,	*l.c.*,	p.	500.	India.
Glyptosoma Paulinae,	*l.c.*,	p.	480.	India.
Harmophorus gibbioides,	*l.c.*,	p.	490.	India.
Mecochelia impressa	*l.c.*,	p.	481.	India.
,, *simplex*	*l.c.*,	p.	481.	India.
Metaxis corpulentus,	*l.c.*,	p.	490.	India.
,, *lativentris*,	*l.c.*,	p.	490.	India.
,, *politus*,	*l.c.*,	p.	490.	India.
Pselaphus elegans,	*l c.*,	p.	483.	India.
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Dalman, Kon. Vet.-Aka. Handl., 1825, p. 398: Hope, Trans. Ent. S. Lond., iv, 1842, p. 106: Aubé, Rév. Psel., Ann. Soc. Ent. Fr., (2s.) ii, 1844, p. 155; *id.*, *l. c.*, (4s.) v, 1865, p. 13: Saulcy, *l. c.*, (5 s.) iv, 1874. p. 21: Lacord., Gen. Col., ii, p. 181: Mun. Cat., p. 699: King, Trans. Ent. S. N. S. Wales, ii (i), 1869, p. 56: Sharp, Nouv. et faits, 1878, p. 63: Schaufuss, Ann. Mus. Civ. Gen., xviii, p. 176: Reitter, Verh. Zool. bot. Ges Wien., xxxi, 1881, p. 447: Wien Ent. Zeit., i, 1882, p. 68.

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Hab. Calcutta.

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Hab. India.

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Hab. Sumatra.

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Hab. Borneo, Telang.

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Hab. Borneo, Telang.

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Hab. Borneo, Telang, Tameangleiang.

Genus **CTENISTES.**

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Porodérus, Sharp, Trans. Ent. S. Lond., 1883, p. 294.
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Hab. India.

gibbiventris *(Sognorus)*, Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 283.
Hab. Batavia.

mitis, Schaufuss, Tijdschr. v. Ent., xxv, 1882, p. 74: Notes Leyden Mus., iv, 1882, p. 154; Berlin Ent. Zeits., xxxi, 1887, p. 288.
Hab. S. E. Borneo, Telang, Pengaron.

Genus **ENOPTOSTOMIS.**

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Hab. Ceylon.

birmanus, Schaufuss, Tijds. v. Ent., xxix, 1886, p. 276.
Hab. Burma.

globulipalpis *(Centrotoma)*, Schmidt, Beitr. z. Mon. Psel., 1838, p. 14, t. 2, f. 10.
Hab. India, Calcutta.

javanus, Schaufuss, Tijds, v. Ent. xxv, 1882, p. 73; *id.*, Notes Leyden Mus., iv, p. 153.
Hab. Java.

opacus, Schaufuss, Festschr. Soc. Ent. Belg., 1880, p. 35; *id.*, Nunq. Otios., iii, p. 511.
Hab. India.

siamensis, Schaufuss, Festschr. *l.c.*, (Sechs. neue Pselaph.), 1880, p. 35; *id.*, Nunq. Otios. iii, p. 511; Ann. Mus. Civ. Gen., xviii, p. 361.
Hab. Siam, Celebes, Maccassar.

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Leconte, Boston Journ. N. H., vi, 1849, p. 75 : Lacord., Gen. Col., ii, p. 166 : Mun. Cat., p. 682 : Leconte & Horn, Class. Col., p. 87.
Raphitreus, Sharp, Trans. Ent. S, Lond., 1883, p. 298.
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Hab. Singapur.

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Hab. Ceylon.

pubescens, Raffray, Rev. d'Ent., i, 1882, p. 13.
Hab. Java.

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Hab. Burma.

umbrosus, Raffray, Rev. d'Ent., i, 1882, p. 10.
Hab. Java.

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diversipalpis, Reitter, Deutsche Ent. Zeits., xxix, 1885, p. 333, t. 2, f. 20.
Hab. Ceylon.

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Raffray, Rev. Mag. Zool., (3s.) v, 1877, p. 286.

vestitus, Schaufuss, Tijds. v. Ent., xxix, 1886, p. 243.
Hab. Sumatra.

Genus **RYXABIS**.

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Somatipion, Schaufuss, Nunq. Otios., ii, p. 457.

anthicoides, Westwood, Trans., Ent. S. Lond., 1870, p. 132 ; *id.*, Thes., *l.c.*, p. 102, t. 4, f. 12.
Hab. Singapur.

Genus **TAPHROSTETHUS**.

Schaufuss, Bull. Soc. Ent. Fr., (6s.) ii, 1882, p. cli.
Epicaris, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1883, p. 370; *id.*, Tijds. v. Ent., xxix, 1886, p. 274.

hamotoides (*Epicaris*), Schaufuss, Ann. Mus. Civ. Gen., xviii, 1883, p. 370.
Hab. Borneo, Sarawak.

Genus **ENANTIUS**.

Schaufuss, Nunq. Ot., ii, 1877, p. 459 ; *id.*, Pselaph. Siam, p. 18.

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Hab. Siam, Bangkok.

rostratus, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 390, t. 20, f. 1.
Hab. Borneo.

Genus **CENTROPHTHALMUS**.

Schmidt, Beitr. z. Mon. d. Pselaph., i, 1838, p. 7, t. 1, f. 1 : Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 450, 459.
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Hab. Borneo, Telang.

Clementis, Schaufuss, Pselaph. Siam's, 1877, p. 20.
Hab. India.

divisus, Reitter, Verh. Zool. bot. Ges. Wien., xxxiii, 1883, p. 390.
Hab. Borneo, Telang.

femoralis, Reitter, *l.c.*, xxxii, 1882, p. 284 : Schaufuss, Berlin Ent. Zeits., xxxi, 1887, p. 288.
Hab. Batavia, Ceylon.

forticornis, Schaufuss, Pselaph. Siam's, 1877, p. 21.
Hab. Siam.

Paria, Schmidt, Beitr. z. Mon. d. Psel., 1838, p. 8, t. 1, f. 1 : Motsch., Bull. Mosc. xxiv (4), 1851, p. 480.
Hab. Calcutta.

punctipennis, Schaufuss, Pselaph. Siam's, 1877, p. 21 ; *id.*, Tijds. v. Ent., xxv, p. 73 ; Notes Leyden Mus., iv, p. 153 ; Ann. Mus. Civ. Gen., xviii, p. 359.
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,, *punctatissimus*, Schaufuss, l.c., p. 21.
Hab. Siam, Batavia Borneo, Celebes, Macassar.

quadristriatus, Schaufuss, Pselaph. Siam's, 1877, p. 22 ; *id.*, Tijds. v. Ent., xxv, p. 73.
Hab. Singapur, E. Java, Batavia.

Genus **SUBULIPALPUS.**

Schaufuss, Nunq. Ot., ii, 1877, p. 459 ; *id.*, Psel. Siam's, p. 23.

spinicoxis, Schaufuss, Psel. Siam's, 1877, p. 23.
Hab. Siam, Bangkok.

Genus **TYRUS.**

Aubé, Mag. Zool., iii, 1833, p. 15 : Erichson, Käfer Mark Brand., i, 1837, p. 263 : Lacord., Gen. Col., ii, p. 167 : Jacq. Duval, Gen. Col. Eur., i, p. 132 : Mun. Cat. p. 682 : Leconte & Horn, Class. Col., p. 87 : Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 450, 459.

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Hab. Ceylon.

javanicus, Raffray, Rev. d'Ent., i, 1882, p. 30.
Hab. Java.

Genus **PSELAPHODES.**

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Atherocolpus, Raffray, Rev. d'Ent., i, 1882, p. 15.

foveolatus, Raffray, *l.c.*, p. 15, t. 1, f. 13.
Hab. Singapur.

heterocerus, Raffray, *l.c.*, p. 16, t, 2, f. 14-16.
Hab. Java.

villosus, Westwood, Trans. Ent. S. Lond., 1870, p. 129 ; *id.*, Thes. Ent. Oxon., p. 99, t. 4, f. 6.
Hab. Borneo, Sarawak.

Genus **ARNYLLIUM.**

Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 391.

ensipes, Reitter, *l.c.*, p. 392, t. 20, f. 10.
Hab. Borneo.

parviceps, Reitter, *l.c.*, p. 392.
Hab. Borneo.

pectinatum, Reitter, *l.c.*, p. 391, t. 20, f. 9 : Schaufuss, Berlin. Ent. Zeits., xxxi, 1887, p. 289.
Hab. Borneo.

Genus **BATRISUS**.

Aubé, *Mon.* Pselaph., Mag. Zool., 1833, p. 45; *id.*, *Révision*, Ann. Soc. Ent. Fr., (2s.) ii, 1844, p. 80 : Lacord., Gen. Col., ii, p. 171 : Jacq. Duval, Gen. Col. Eur., i, p. 130 : Mun. Cat., p. 687 : Reitter, Deutsche Ent. Zeits., xxv, 1882, p. 133 ; *id.*, *ib.*, xxxiii, 1888, p. 244 ; *id.*, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 451, 463 ; *ib.*, *Syn.*, xxxiii, 1883, p. 393 : Leconte & Horn, Class. Col., p. 88 : Sharp, Biol. Centr.-Amer., Col., ii (i), p. 10.

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Hab. Borneo, Tumbang Hiang.

Achillei, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 386.
Hab. Java, Tsibodas.

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Hab. Borneo, Sarawak.

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Hab. Java.

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Hab. India, Burma.

architectus (*Batrisodes*), Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 397, t. 20, f. 4.
Hab. Borneo, Tameangleiang.

basalis, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 396.
Hab. Sumatra Ajer Mantcior.

batavianus (*Batrisodes*), Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 284.
Hab. Borneo, Tameangleiang.

bipunctulus (*Batrisodes*), Reitter, Verh. Zool. bot. Ges. Wien., xxxiii, 1883, p. 394.
Hab. Borneo.

birmanus, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1883, p. 394.
Hab. Burma.

brevis, Schaufuss, *l. c.*, p. 396.
Hab. Borneo, Sarawak.

capitatus, Raffray, Rev. d'Ent., i, 1882, p. 73.
Hab. Java.

cavifer *(Batrisodes)*, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 395.
Hab. Borneo, Telang.

celebensis, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 373 : (*Syrbatus*) Reitter, *Syn.*, p. 393.
Hab. Celebes, Macassar, Borneo.

claviger *(Batrisodes)*, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 395.
Hab. Borneo, Telang.

custos, Schaufuss, Tijds. v. Ent., xxx, 1887, p. 138.
Hab. Borneo.

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glicatus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 489 : Schaufuss, Bull. Soc. Ent. Fr., (6s.) ii, 1882, p. cxvii.
Hab. India, Burma.

excisus, Schaufuss, Pselaph. Siam's 1877, p. 16 ; *id.*, Ann. Mus. Civ. Gen., xviii, p. 379.
Hab. Siam.

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Hab. Java.

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Hab. Batavia, Telang, Barabei.

Grouvelli, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 378 : (*Batrisodes*) Reitter, *Syn.*, p. 393.
Hab. Sumatra.

grypochirus, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 379.
Hab. Borneo, Sarawak.

heterocerus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 484.
Hab. India.

holosericeus, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 387.
Hab. Sumatra, Singalang.

incertus, Schaufuss, *l.c.*, p. 392.
Hab. Borneo, Sarawak.

indus, Schaufuss, l.c., p. 375 : (*Batrisodes*) Reitter, *Syn.* p. 393.
Hab. Borneo, Sarawak.

javanus, Raffray, Rev. d'Ent., i, 1882, p. 63.
Hab. Java.

laminidens *(Batrisodes)*, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 397, t. 20, f. 5.
Hab. Borneo.

lateridens, Reitter, *l.c.*, p. 398.
Hab. Borneo, Tameangleiang.

longipennis, Raffray, Rev. d'Ent., i, 1882, p. 64: Schaufuss, Ann. Mus. Civ. Gen., xviii, p. 387.
Hab. Java.

margaritifer, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 377.
Hab. Sumatra.

morulus (*Syrbatus*), Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 285.
Hab. Batavia.

nicotianus, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 393.
Hab. Sumatra.

orbicollis, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 399, t. 20, f. 8.
Hab. Borneo, Telang.

pallidus, Raffray, Rev. d'Ent., i, 1882, p. 74.
Hab. Java.

physoderes, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 383.
Hab. Sumatra.

proportionis, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 395.
Hab. Sumatra, Ajer Mantcior.

pubescens, Raffray, Rev. d'Ent., i, 1882, p. 62.
Hab. Java.

pubifer (*Batrisodes*), Reitter, Verh. Zool. bot. Ges Wien, xxxiii, 1883, p. 397.
Hab. Borneo, Telang.

quaestus, Schaufuss, Tijds. v. Ent., xxx, 1887, p. 139.
semisulcatus, Motsch., Bull. Mosc., xxiv (4), 1851, p. 487.
Hab. India, Burma.

Raffrayii (*Batrisodes*), Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 285.
bicolor, Raffray, Rev. d'Ent., i, 1882, p. 63 (*nec* Reitter).
Hab. Java.

Ritsemae, Schaufuss, Tijds. v. Ent., xxv, 1882, p. 70; *id.*, Notes Leyden Mus., iv., 1882, p. 150.
Hab. Sumatra, Bencoolen.

sarawakensis, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 381.
Hab. Borneo, Sarawak.

sculpturatus, Schaufuss, Tijds. v. Ent., xxv, 1882, p. 71; *id.*, Notes Leyden Mus., p. 151.
Hab. E. Java, Ardjoeno.

semisulcatus, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 391, (*nec* Motsch.).
Hab. Java.

septemdentatus, Schaufuss. *l.c.* p. 376: (*Batrisodes*) Reitter, *Syn.*, p. 393.
Hab. Borneo, Sarawak.

septemfoveolatus, Schaufuss, Pselaph. Siam's, 1877, p. 15.
Hab. Siam.

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Hab. Sumatra.

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Hab. Ceylon.

spinidens (*Syrbatus*), Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 398, t. 20, f. 7.
Hab. Borneo.

spinosus, Motschulsky, Et. Ent., vii, 1858, p. 28.
Hab. India.

superbus, Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 393.
Hab. Sumatra.

tarsalis (*Batrisodes*), Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 396, t. 20, f. 6.
Hab. Borneo, Bearbei, Telang.

vestigifer (*Batrisodes*), Reitter, *l.c.*, p. 394, t. 20, f. 3.
Hab. Borneo.

Genus **DIROPTRUS**.

Motschulsky, Et. Ent., vii, 1858, p. 28 : Mun. Cat., p. 693.
Listriophorus, Schaufuss, Nunq. Otios., ii, p. 245, 289 : Reitter, Verh. Ver. Brünn, xx, 1882, p. 189 : Sharp, Biol. Centr. Amer. Col. ii (i), p. 21.

ceylonicus, Motschulsky, Et. Ent., vii, 1858, p. 28.
Hab. Ceylon.

Genus **BERLARA**.

Reitter, Verh. Ver. Brünn., 1882, p. 189, 206 ; *id.*, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 286.

crassipalpis, Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 287, ♂ ; *id.*, Deutsche Ent. Zeits., xxix, 1885, p. 336, t. 3, f. 21-23.
Hab. Batavia.

Genus **BATRISOSCHEMA**.

Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 399.

lateridentata, Reitter, *l.c.*, p. 400, t. 20, f. 11.
Hab. Borneo, Barabei.

Genus **BORNEANA**.

Schaufuss, Bull. Soc. Ent. Fr., (6s.) ii, 1882, p. cxl.

biformis, Schaufuss, *l.c.*, p. cxli.
Hab. Borneo, Mompawa.

Genus **BRYAXIS**.

Leach, Zool. Misc., iii, 1817, p. 85 : Aubé, Ann. Soc. Ent. Fr., (2s.) ii, 1844, p. 103 : Lacord., Gen. Col., ii, p. 174 : Jacq. Duval, Gen. Col. Eur., i, p. 131 : Mun. Cat., p. 690 : Casey, Bull. Calif. Ac. Scien., ii, 1886, p. 179 : Saulcy, Soc. Hist. Nat. Metz, 1876 : Raffray, Rev. d'Ent., i, 1882, p. 30 : Gredler, Z. Ferd., (3) 26, p. 219,

note : Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 451, 464 ; tab. syn., *l.c.*, xxxiii, 1883, p. 401 : Leconte & Horn, Class Col., p. 88 : Sharp, Biol. Centr. Amer., Col., ii (i), p. 24.

Acamaldes, Reitter, Deutsche Ent. Zeits., xxiv, 1882, p. 140.

Anthicus, pt. Fabr., Syst. Eleuth., i, 1801, p. 288.

Brachygluta, Thomson, Skand. Col., i, 1859, p. 4 ; iii, p. 236 : Reitter, Verh. *l.c.* 1881, p. 465.

Byraxis, Reitter, Verh. Ver. Brünn, xviii, 1880, p. 16.

Cryptorhinula, Schaufuss, Tijds. v. Ent., xxx, 1887, p. 150.

Dicrobia, Thomson ; *teste* Reitter.

? Metaxis, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 490 : Mun. Cat., p. 689.

Nisa, Casey, Bull. Calif. Acad. Sci., ii, 1886, p. 182.

Nisaxis, Casey, *l.c.*, p. 183.

Reichenbachia, Leach, Zool. Journ., ii, 1826 : Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 464, 474 ; *ib.*, xxxiii, p. 401.

Rybaxis, Saulcy, Bull. Soc. Metz., (2s.) xvi, 1883, p. 28 : Reitter, *l.c. supra*, p. 464, 477.

affinissima (*Reichenbachia*), Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 402.
Hab. Borneo, Tameanglaiang, Pengaron.

amica (*Rybaxis*), Reitter, *l.c.*, p. 405.
Hab. Bornoe, Pengaron.

amitta (*Reichenbachia*), Reitter, *l.c.*, p. 402.
Hab. Borneo, Barabei.

atomus, Schaufuss, Berlin. Ent. Zeits., xxxi, 1887. p. 294.
Hab. Sumatra.

clara, Schaufuss, Tijds. v. Ent., xxx, 1387, p. 113.
Hab. Sumatra.

aurita, Schaufuss, Tijds. v. Ent , xxx, 1887, p. 115.
? var. *intuscurvata*, Schaufuss, *q. v.*
Hab. Sumatra.

cymbularia (*Rybaxis*), Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 292.
Hab. Batavia.

expanda (*Reichenbachia*), Reitter, *l.c.*, p. 288 : Schaufuss, Berlin Ent. Zeits., xxxi, 1887, p. 291.
Hab. Batavia.

extuscurvata, Schaufuss, Tijds. v. Ent., xxx, 1887, p. 114.
Hab. Sumatra.

fulva, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 493 : Schaufuss, Berlin Ent. Zeits., xxxi, 1887, p. 292.
Hab. India, ? Burma.

gigantea (*Rybaxis*), Motschulsky, *l.c.*, xxxvi (2), 1863, p. 422.
Hab. Ceylon.

Grabowskyi (*Reichenbachia*), Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 289.
Hab. Borneo, Tumbang Hiang, Telang.

imperatrix (*Rybaxis*), Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 363.
Hab. Borneo, Sarawak.

inconspicua, Schaufuss, Berlin Ent. Zeits., xxxi, 1887, p. 294.
Hab. Sumatra.

ingrata (*Reichenbachia*), Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 403.
Hab. Borneo.

integrostriata (*Reichenbachia*), Reitter, *l.c.*, p. 403, t. 20, f. 12.
Hab. Borneo, Telang.

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? var. *aurita*, Schaufuss, *l.c.*, p. 115, *q.v.*
Hab. Sumatra.

invalida (*Reichenbachia*), Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 288.
Hab. Borneo.

lamellicornis (*Reichenbachia*), Reitter, *l.c.*, p. 290.
Hab. Borneo, Tumbang Hiang.

negligens (*Reichenbachia*), Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 403.
Hab. Borneo, Pengaron.

nigrocephala (*Brachygluta*), Schaufuss, Psel. Siam's, 1877, p. 10.
Hab. Siam, Bangkok.

nitidissima, Raffray, Rev. d'Ent., i, 1882, p. 36.
Hab. Java.

nubila (*Rybaxis*), Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 292.
Hab. Borneo, Tumbang Hiang.

ornatissima, Schaufuss, Tijds. v. Ent., xxx, 1887, p. 115.
Hab. Sumatra.

pilicollis (? *Metaxis*), Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 421.
Hab. Ceylon.

pilifera, Motschulsky, *l.c.*, xxiv (4), 1851, p. 494.
Hab. India.

punctithorax (*Reichenbachia*), Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 290.
Hab. Java, Batavia, Borneo, Tambang Hiang.

rufa, Schmidt, Beitr. z. Mon. d. Psel., 1838, p. 6: (*Reichenbachia*), Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 287: Schaufuss, Berlin Ent. Zeits., xxxi, 1887, p. 289: Reitter, *ib.*, xxxii, p. 465; *id.*, Bull. Soc. Ent. Fr., (6s.) iii, 1883, p. ix.
brevicornis, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 493.
? *Baumeisteri*, Schaufuss, Psel. Siam's, 1877, p. 7 ♂.
cordata, Schaufuss, l.c., p. 9; *id.*, Tijds. v. Ent., xxv, 1882, p. 69.
? *mamilla*, Schaufuss, l.c., p. 9; *id.*, Tidjs. v. Ent. l.c.
Hab. Siam, Batavia, Ceylon, Calcutta.

sarawakensis (*Rybaxis*), Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 364.
Hab. Borneo, Sarawak.

Schaufussii (*Reichenbachia*), Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 289.
Hab. Java, Batavia, Borneo, Tambang Hiang.

sphaerica, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 492 : Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 291 ; *id.*, Bull. Soc. Ent. Fr., (6s.) iii, 1883. p. ix : (*Eupines*, King),

fonensis (*Eupines*), Schaufuss, Psel. Siam's, 1877, p. 10 ; *id.*, Tijds. v. Ent., xxv, p. 68 ; Berlin. Ent. Zeits., xxxi, p. 293, *teste*, Reitter, Bull. Soc. Ent. Fr., (6s.) iii, 1883, p. ix.

siamensis (*Eupines*), Schaufuss, Psel. Siam's, 1877, p. 9 ; *id.*, Tijds. v. Ent. xxv, p. 69.
Hab. India, Siam.

subvalida (*Reichenbachia*), Reitter. Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 404.
Hab. Borneo, Telang.

sumatrensis, Schaufuss, Tijds. v. Ent., xxx, 1887, p. 113.
Hab. Suma tra.

telangensis (*Reichenbachia*), Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 402.
Hab. Borneo, Telang.

Genus **BATRAXIS**.

Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 451, 464.

Batrisomorpha Raffray, Rev. d'Ent., i, 1882, p. 38 : Reitter, Deutsche Ent. Zeits., xxiv, 1881, p. 38.

carinulata (*Batrisomorpha*), Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 365.
Hab. Penang, Java, Sumatra.

Doriae (*Batrisomorpha*), Schaufuss, *l.c.*, 1882, p. 366.
Hab. Sumatra.

foveicollis (*Batrisomorpha*), Raffray, Rev. d'Ent., i, 1882, p. 39.
Hab. Java.

ursula (*Batrisomorpha*), Schaufuss, Ann, Mus. Civ. Gen., xviii, 1882, p. 367.
Hab. Java.

Genus **COMATOPSELAPHUS**.

Schaufuss, Ann. Mus. Civ. Gen., xviii, 1882, p. 368.

opacicollis, Schaufuss, *l.c.*, p. 369.
Hab. Borneo, Sarawak.

Genus **SATHYTES**.

Westwood, Trans. Ent. S. Lond., 1870, p. 128 ; *id.*, Thes. Ent. Oxon., p. 97.

Plagiophorus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 496 : Mun. Cat. p. 695.

inermis (*Plagiophorus*), Motschulsky, *l.c. supra, p.* 496.
Hab. India.

paradoxus (*Plagiophorus*), Motschulsky, *l.c.*, p. 496.
Hab. India.

punctiger, Westwood, Trans. Ent. S. Lond., 1870, p. 128 ; *id.*, Thes. Ent. Oxon., 1874, p. 97, t. 4, f. 3.
Hab. Borneo.

Genus **BYTHINODERES**.

Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 407.

Grabowskyi, Reitter, *l.c.*, p. 488, t. 20, f. 14.
Hab. Borneo, Telang.

Genus **BYTHINOMORPHA**.

Schaufuss, Tijds. v. Ent., xxx, 1887, p. 109.

exsculpta, Schaufuss, *l.c.*, p. 110.
Hab. Sumatra,

Genus **BYTHINOPHANAX**.

Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 405.

bicornis, Reitter, *l.c.*, p. 407, t. 20, f. 13.
Hab. Borneo, Telang.

exilis, Reitter, *l.c.*, p. 406.
Hab. Borneo, Tameanglaiang.

latebrosus, Reitter, *l.c.*, p. 406.
Hab. Borneo, Telang.

Genus **PSELAPHUS**.

Herbst, Natursyst. Ins., Käfer, iv, 1792, p. 106 : Aubé, Mon. Psel., p. 18 ; *id.*, Ann. Soc. Ent. Fr., (2s.) ii, 1844, p. 100 : Lacord., Gen. Col., ii, p. 169 : Jacq. Duval, Gen. Col. Eur., i, p. 130 : Mun. Cat., p. 684 : Reitter, Syn. tab., in Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 408 : Raffray, Rev. d'Ent., ii, 1883, p. 235 : Leconte & Horn, Class. Col., p. 87 : Sharp, Biol. Centr. Amer., Col., iii (i), p. 34 : Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 451, 503 ; *ib.*, xxxiii, 1883, p. 409.

Callithoraæ, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 482.
Dicentrius, Reitter, Verh. Ver. Brünn, 1882, p. 192, 208.

articularis, Schaufuss, Psel. Siam's, 1877, p. 6.
Hab. Siam, Bangkok.

bifoveolatus, Schaufuss, *l.c.*, p. 6.
Hab. Siam, Batavia.

biocellatus, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 410.
Hab. Borneo, Telang, Pengaron.

bivestitus, Schaufuss, Berlin. Ent. Zeits., xxxi, 1887, p. 295.
Hab. S. E. Borneo.

brevicornis, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 411.
Hab. Batavia.

calopygaeus, Schaufuss, Berlin Ent. Zeits., xxxi, 1887, p. 294.
Hab. S. E. Borneo.

canaliculatus, Schaufuss, Psel. Siam's, 1877, p. 5.
subtilis, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 483, pt.
Hab. Siam, Bangkok, Borneo, Sarawak.

laevicollis, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p 410, ♀.
Hab. Ceylon.

lativentris, Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 293.
Hab. Batavia, Borneo, Telang.

multangulus, Schaufuss, Psel. Siam's, 1877, p. 4; *id.*, Ann. Mus. Civ. Gen., xviii, p. 355.
subtilis, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 483, pt.
Hab. Siam, Bangkok, Sumatra, Celebes, Macassar.

parvipalpis, Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 294.
Hab. Batavia, Borneo, Telang.

pilicollis, Reitter, *l.c.*, p. 293.
Hab. Batavia.

pilipalpis, Reitter, Notes, Leyden Mus., v. 1883, p. 9.
Hab. Sumatra.

sexstriatus, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 411.
Hab. Borneo, Tameanglaiang.

trossulus, Schaufuss, Tijds. v. Ent., xxix, 1886, p. 247.
Hab. Sumatra.

unipunctatus, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 410.
Hab. Borneo, Pengaron.

Genus **TYRAPHUS**.

Sharp, Trans. Ent. S. Lond., 1874, p. 489.

semiopacus (*Tychus*), Schaufuss, Psel. Siam's, 1877, p. 3.
Hab. Siam, Bangkok.

Genus **CURCULIONELLUS**.

Westwood, Trans. Ent. S. Lond., 1870, p. 127; *id.*, Thes. Ent. Oxon., 1874, p. 98: Reitter, Bull. Soc. Ent. Fr., (6s.) iii, p. lxxvi: Raffray, Rev. d'Ent., ii, p. 235.

rugithorax, Reitter, Verh., Zool. bot. Ges. Wien, xxxii, 1882, p. 294.
Hab. Batavia.

Genus **TYCHUS.**

Leach, Zool. Misc., iii, 1817, p 84: Lacord., Gen. Col., ii, p. 170 : Jacq. Duval, Gen. Col. Eur., i, p. 132 : Mun. Cat., p. 685 : Leconte & Horn, Class. Col., p. 87 : Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 451, 509.

dilatatus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 496.
Hab. India.

quadrifoveolatus, Motschulsky, *l.c.*, p. 495 : Schaufuss, Bull. Soc. Ent. Fr., (6s.) ii, 1882, p. cxiii.
Hab. India, Burma.

testaceus, Schaufuss, Pselaph. Siam's, 1877, p. 4.
Hab. Siam, Bangkok.

Genus **ATYCHODEA.**

Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 412.

lenticornis, Reitter, *l.c.*, p. 414, t. 20, f. 19, 20.
Hab. Borneo, Telang, Tameanglaiang.

Raffrayi, Reitter, *l.c.*, p. 414, t. 20, f. 23.
Hab. Borneo, Telang.

Simoniana, Reitter, *l.c.*, p. 413, t. 20, f. 21, 22.
Hab. Borneo, Telang.

singularis, Reitter, *l.c.*, p. 414, t. 20, f. 24 : Schaufuss, Berlin Ent. Zeits., xxxi, 1887, p. 297.
Hab. Borneo, Tameanglaiang.

Genus **FILIGER.**

Schaufuss, Pselaph. Siam's, 1877, p. 17 ; *id.*, Nunq. Otios., ii, 1877, p. 246, 454 : Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 415.

ampliventris, Schaufuss, Pselaph. Siam's, 1877, p. 17.
Hab. Siam, Bangkok.

cariniventris, Schaufuss, *l.c.*, p. 17.
Hab. Siam.

conicicollis, Schaufuss, *l.c*, p. 17.
Hab. Siam, Bangkok.

primus, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 415, t. 20, f. 18.
Hab. Borneo, Telang.

Genus **APHARINA.**

Reitter, Verh. Natur. Ver. Brünn, xx, 1882, p. 194 ; *id.*, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 295 ; *ib.* xxxiii, p. 414.

fuscipennis, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 415, t. 20, f. 15.
Hab. Borneo, Telang.

Simonis, Reitter, *l.c.*, xxxii, 1882, p. 296.
Hab. Batavia.

squamiceps (*Panaphantus*), Schaufuss, Notes Leyden Mus., iv, 1882, p. 146 ; *id.* Tijds. v. Ent., xxv, 1882, p. 66.
Hab. Java.

Genus **MESTOGASTER**.

Schmidt, Beitr. z. Mon. Psel., 1838, p. 9 : Reitter, Wien Ent. Zeit., i, p. 170 ; *id.*, Bull. Soc. Ent. Fr., (6s.) iii, 1883, p. x.

? *Metaxoides*, Schaufuss, Pselaph. Siam's, 1877, p. 13 ; *id.*, Nunq. Otios., ii, p. 453 ; Ann. Soc. Ent. Fr., (6s.) ii, 1882. p. 108, 117 ; *ib.*, Bull., p. cxvii.

bruchiformis (*Metaxoides*), Schaufuss, Pselaph. Siam's, 1877, p. 13.
Hab. Siam, Bangkok.

crassicornis, Schmidt, Beitr. z. Mon. Psel., 1838, p. 9, t. 2, f. 8.
Hab. India.

nitidicollis, Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882. p. 296.
Hab. Batavia.

Genus **HYBOCEPHALUS**.

Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 482 : Mun. Cat., p. 693 : Schaufuss, Nunq. Otios., ii, p. 246 ; *id.*, Ann. Mus. Civ. Gen., 1883, p. 353 : Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 416.

dentiventris, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 416.
Hab. Borneo, Telang.

informis, Reitter, *l.c.*, p. 417, t. 20, f. 17.
Hab. Borneo, Telang.

minimus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 482 : Schauf., Ann. Mus. Civ. Gen., xviii, p. 354 : Reitter, *l.c. supra*, p. 416.
Hab. India, Celebes, Macassar.

squamosus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 482 : Schauf., *l.c. supra*, p. 355 : Reitter, *l.c. supra*, p. 416.
Hab. India, Burma.

telangensis, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 417, t. 20, f. 16.
Hab. Borneo, Telang, Tameanglaiang.

Genus **IMTEMPUS**.

Reitter, Verh. Naturf. Ver. Brünn, xx, 1882, p. 195, 209.

punctatissimus, Reitter, Deutsche Ent. Zeits., xxix, 1885, p. 337, t. 3, f. 27.
Hab. Philippines, Manilla.

Genus **MECHANICUS.**

Schaufuss, Tijds v. Ent., xxx, 1887, p. 158.

chlamydophorus, Schaufuss, *l.c.*, p. 158.
Hab. Sumatra.

Genus **PTHARTOMICRUS.**

Schaufuss, Tijds. v. Ent., xxx, 1887, p. 156.

externus, Schaufuss, *l.c.*, p. 156.
Hab. Sumatra.

Genus **ZETHOPSUS.**

Reitter, *Syn. tab.*, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 418: Raffray, Rev. d'Ent., vi, p. 50.
Zethus, Schaufuss, Nunq. Otios., ii, 1872, p. 294; *id.*, Psel. Siam's, 1877, p. 11 (*nom praeoc.*).

batavianus, Schaufuss Tijds. v. Ent., xxv, 1882, p. 67; *id.*, Notes Leyden Mus., iv, p. 147: Reitter, *Syn.*, p. 419.
Hab. Batavia.

Dohrni, Raffray, Rev. d'Ent., ii, 1883, p. 248, t. 5. f. 24, 25.
Hab. Burma.

nitidulus, Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 382; *Syn.*, p. 419.
Hab. Ceylon.

opacus, Schaufuss, Psel. Siam's, 1877, p. 12: Reitter, *Syn.*, p. 418.
Hab. Siam.

sculptifrons, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 419.
Hab. Batavia.

simplicifrons, Reitter, *l.c.*, p. 419.
Hab. Borneo.

Westwoodii, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 500: Schaufuss, Bull. Soc. Ent. Fr., (6s.) ii, 1882, p. cxiii: Reitter, *Syn.*, p. 419.
Hab India, Burma.

Genus **NEODEUTERUS.**

Schaufuss, Tijds. v. Ent., xxx, 1887, p. 151.

admirandus, Schaufuss, *l.c.*, p. 152.
Hab. Sumatra.

alter, Schaufuss, *l.c.*, p. 153.
Hab. Sumatra.

Genus **PYXIDICERUS.**

Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 422: Mun. Cat., p. 697: Schaufuss, Tijds. v. Ent., xxx, 1887, p. 93.

amoenus, Schaufuss, Tijds. v. Ent., xxx, 1887, p. 94, 95, 99.
Hab. Sumatra.

castaneus, Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 423, t. 9, f. 16 : Schaufuss, *l.c. supra*, p. 94.
Hab. Ceylon.

cordiger, Schaufuss, Tijds. v. Ent., xxx, 1887, p. 94, 95, 99.
Hab. Sumatra.

Rajah, Schaufuss, *l.c.*, p. 93, 94, 96.
Hab. Sumatra.

triophthalmus, Schaufuss, *l.c.*, p. 94, 95, 96.
Hab. Sumatra.

tythus, Schaufuss, *l.c.*, p. 94, 95, 97.
Hab. Sumatra.

venustus, Schaufuss, *l.c.*, p. 94, 95, 98.
Hab. Sumatra.

Genus **APHILIA**.

Reitter, Verh. Naturf. Ver. Brünn, xx, 1881, p. 196 ; *id.*, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 297.

femorata, Reitter, Verh. Zool. bot., Ges. Wien, xxxii, 1882, p. 297.
Hab. Borneo, Tumbang Hiang.

Genus **OCTOMICRUS**.

Schaufuss, Nunq. Ot., ii, 1877, p. 452 ; Psel. Siam's. p. 14.
interruptus, Schaufuss, Tijds. v. Ent., xxix, 1886, p. 275.
Hab. Sumatra.
longulus, Schaufuss, Pselaph. Siam's, 1877, p. 174.
Hab. Siam, Bangkok.
verticalis, Schaufuss, Tijds. v. Ent., xxix, 1886, p. 275.
Hab. Sumatra.

Genus **EUPLECTOMORPHUS**.

Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 424 : Mun. Cat., p. 698 : Schaufuss, Tijds. v. Ent., xxix, 1886, p. 282.

elegans, Schaufuss, Tijds. v. Ent., xxx, p. 159.
Hab. Sumatra.

pygmaeus, Motschulsky, Bull. Mosc., xxxvi (2), 1863, p. 424, t. 9, f. 17.
Hab. Ceylon.

testis, Schaufuss, Tijds. v. Ent., xxix, 1886, p. 281.
Hab. Ceylon.

Genus **EUPLECTUS**.

Leach, Zool. Misc., iii, 1817, p. 80 : Aubé, *Rév.* Psel., Ann. Soc. Ent. Fr., (2s.) ii, 1844, p. 140 : Lacord., Gen. Col., ii, p. 177 : Jacq. Duval, Gen. Col. Eur., i, p, 135 : Mun. Cat., p. 695 : Raffray, Rev. d'Ent., ii, 1883, p. 229 : Broun, New Zeal. Jl. Sci., ii, 1884, p. 238 : Leconte & Horn, Class. Col., p. 88 : Sharp, Biol. Centr. Amer., Col., ii (i), p. 36 : Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 452, 521.

Bibloplectus, Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 529.

Biloporus, Thomson, Skand. Col., i, 1859, p. 53 ; iii, p. 225 : Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 452, 530.

Pseudoplectus, Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 452, 531.

acuminatus, Schaufuss, Tijds. v. Ent., xxv, 1882, p. 69 ; Notes Leyden Mus., iv, p. 149.

Hab. Batavia.

brachyurus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 500.
Hab. India.

breviusculus, Motschulsky, *l.c.*, p. 500.
Hab. India.

denticollis (*Euplectops*), Schaufuss, Tijds. v. Ent., xxx, 1887, p. 155.
Hab. Sumatra.

divergens, Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 420, t. 20, f. 25.
Hab. Borneo, Telang.

fuscipennis (*Pseudoplectus*), Reitter, *l.c.*, xxxii, 1882, p. 297.
Hab. Borneo.

hipposideros, Schaufuss, Pselaph. Siam's, 1877, p. 12.
Hab. Siam.

indicus, Schmidt, Beitr. z. Mon. Psel., 1838, p. 10, t. 2, f. 6.
Hab. India.

infuscatus, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 500.
Hab. India.

metallicus, Schmidt, Beitr. z. Mon. Psel., 1838, p. 11, t. 2, f. 7.
Hab. Calcutta.

pumilio (*Bibloplectus*), Reitter, Verh. Zool. bot. Ges. Wien, xxxii, 1882, p. 298.
Hab. Batavia.

Solskyi, Schaufuss, Pselaph. Siam's, 1877, p. 13.
Hab. Siam.

Genus **TRICHONYX**.

Chaudoir, Bull. Mosc., xviii (3), 1845, p. 164 : Lacord., Gen. Col., ii, p. 172 : Jacq. Duval, Gen. Col. Eur., i, p. 134 : Mun. Cat., p. 686 : Leconte & Horn, Class. Col. p. 88 ; Sharp, Biol. Centr. Amer., Col., ii (i), p. 40 ; Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 452, 520.

Amauronyx, Reitter, Verh. Zool. bot. Ges. Wien, xxxi, 1881, p. 452, 519.

filiformis, Raffray, Rev. d'Ent., i, 1882, p. 79.
Hab. Java.

Species incertæ sedis.

atomus (*Bythinus*), Schaufuss, Tijds. v. Ent., xxv, 1882, p. 65 ; *id.*, Notes Leyden Mus. iv, 1882, p. 145 : Reitter, Verh. Zool. bot. Ges. Wien, xxxiii, 1883, p. 408.
Hab. Java, Batavia.

Family STAPHYLINIDÆ.

Catalogue of the Insecta *of the Oriental Region*, No. 12. *Order* Coleoptera, *Family* Staphylinidæ.—*By* E. T. Atkinson, B. A.

The *Staphylinidæ* are very numerous in the Oriental Region, though little attention has been paid to them in India proper. They are usually of a small size, with short elytra, and an entirely corneous abdomen, for the most part exposed. They are divided into two sub-families, *Staphylininæ* and *Micropeplinæ*, of which the first is represented in our Fauna. Messrs. Leconte & Horn, following Jacquelin Duval and Fauvel, distribute the sub-family *Staphylininæ* into the following tribes :—

Antennæ inserted upon the frons.	2
Antennæ inserted at the anterior margin of the head.	3
Antennæ inserted under the sides of the frons.	4
2. Prothoracic spiracles visible, front coxæ large ; antennæ not abruptly clavate : fourth joint of maxillary palpi distinct.	I. *Aleocharini.*
Prothoracic spiracles not visible, front coxæ small, antennæ slender, distinctly clavate, fourth joint of maxillary palpi obsolete.	III. *Stenini.*
3. Antennæ filiform or gradually thickened, fourth joint of maxillary palpi distinct.	II. *Staphylinini.*
4. Front coxæ conical, prominent ;	5
Front coxæ transverse	ix *Protinini.*
Front coxæ globose	x *Piestini.*
5. No ocelli.	6.
Ocelli two, situated at or behind the vertex.	viii *Homalinini.*
6. Hind coxæ transverse ;	7.
Hind coxæ conical.	iv *Paederini.*
7. Seventh abdominal segment retractile	8.
Seventh abdominal segment exposed	vii *Oxytelini*
8. Prothoracic spiracles visible : epipleuræ well defined	v. *Tachyporini.*
Prothoracic spiracles concealed : epipleuræ ill defined.	vi *Phlaeocharini.*

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Family **STAPHYLINIDÆ**

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ALEOCHARINI :—(*Aléocharides*), Lacord., Gen. Col., ii, 1854, p. 26: Jacq. Duval, Gen. Col. Eur, ii, p. 2: Mun. Cat., p. 502: Muls. & Rey, Hist. Nat. Col. France, *Aleoch.*, 1871: Fauvel, Ann. Mus. Civ. Gen., xii, p. 287: Leconte & Horn, Class Col., p. 90: Sharp, Biol. Centr. Amer., Col., i (2), 1883, p. 145.

Genus **AUTALIA**.

Mannerheim, Brachél., 1830, p. 87: Erichson, Gen. Staph., p. 46: Boisd. & Lacord., Faune Ent. Paris., i, 1835, p. 557: Lacord., Gen. Col., ii, p. 27: Kraatz, Naturg. Ins., ii, p. 29: Jacq. Duval, Gen. Col., ii, p. 4, t. 1, f. 3: Mun. Cat., p. 502: Leconte & Horn, Class. Col., p. 92.

angustata, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 261.
Hab. India.

riparia, Motschulsky, Et. Ent., 1859, p. 93.
Hab. Ceylon.

Genus **FALAGRIA**.

Mannerheim, Brachél., 1830, p. 86 : Erichson, Gen. Staph., p. 48 : Boisd. & Lacord., Faune Ent. Paris, i, 1835, p 555 : Lacord., Gen. Col., ii, p. 28 : Kraatz, Naturg. Ins., ii, p. 32 : Jacq. Duval, Gen. Col. Eur., ii, p. 4, t. 1, f. 3 : Mun. Cat., p. 502 : Leconte, Proc. Ac. Sci : Philad., 1866, p. 372 : Fauvel, Ann. Mus. Civ. Gen., x, p. 295 ; *id.*, *ib.*, xii, p. 309 : Sharp, Trans. Ent. S. Lond., 1876, p. 41 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 232 : Leconte & Horn, Class. Col., p. 91.

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Stilicoides, Broun, New Zealand Col., 1880, p. 93.

dimidiata, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 93.
flavocincta, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 4.
Hab. India, Ceylon.

gracilis, Motschulsky, xxxi (3), 1858, p. 260.
Hab. India.

longicornis, Kraatz, Wiegm. Arch., xxv, (i), 1859, p. 6.
Hab. Ceylon.

obscura, Gravenhorst, Microp. Brunsw., 1802, p. 74 : Kraatz, Nat. Ins. Deutsch., ii, p. 35 ; *id.*, Wiegm. Arch., xxv (ii), p. 5 : Jacq. Duval, Gen. Col., Eur., ii, p. 4, t. 1, f. 4.
flavipes, Stephens, Ill. Brit. Ent., v, 1832, p. 105.
floralis, Stephens, *l.c.*, p. 105.
nitens, Stephens, *l.c.*, p. 105.
Hab. Britain, France, Europe, India.

parva, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 6.
Hab. Ceylon.

pygmaea, Kraatz, *l.c.*, p. 7.
Hab. Ceylon.

subrugosa, Kraatz, *l.c.*, p. 5.
Hab. Ceylon.

veluticollis, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 261.
opacicollis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 4.
Hab. India, Ceylon.

vestita, Boheman, Freg. Eug. Resa, Col., 1858, p. 25.
Hab. China.

vilis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 5.
Hab. India.

Genus BOLITOCHARA.

Mannerheim, Brachél., 1830, p. 75 : Erichson, Gen. Staph., p. 57 : Lacord., Gen. Col., ii, p. 30 : Mun. Cat., p. 504 : Kraatz, Naturg. Ins., ii, p. 36 : Jacq. Duval, Gen. Col., ii, p. 8, t. 1, f. 5 : Fauvel, Ann. Mus. Civ. Gen., xii, p 306 : Leconte & Horn, Class. Col., p. 93.

amabilis, Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 154.
Hab. Ceylon.

testacea, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 7.
Hab. Ceylon.

Genus ECCOPTOGENIA.

Kraatz, Wiegm. Arch., xxv (i), 1859, p. 8 : Mun. Cat., p. 505.

rufa, Kraatz, *l.c.*, p. 9, t. 1, f. 1 *a.-c.*
Hab. Ceylon.

Genus HOPLANDRIA.

Kraatz, Linn. Ent., xi, 1857, p. 4, t. 1, f. 6, t. 2, f. 14 : Mun. Cat., p. 505 : Leconte & Horn, Class. Col., p. 91 : Sharp, Biol. Centr. Amer., Col., i (2), p. 219.

fuscipennis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 9.
Hab. Ceylon.

Genus PELIUSA.

Erichson, Gen. Staph., 1840, p. 192 : Lacord., Gen. Col., ii, p. 44 : Mun. Cat., p. 506.

pallescens, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 226.
Hab. India.

Genus SCHISTOGENIA.

Kraatz, Linn. Ent., xi, 1857, p. 39 : Mun. Cat., p. 506.

crenicollis, raatz, *l.c. supra*, p. 40 ; *id.*, Wiegm. Arch., xxv (i), 1859, p. 13, t. 1, f. 5 *a.-b.*
Hab. Ceylon.

Genus SILUSA.

Erichson, Käfer Mark Brand., i, 1837, p. 377 ; *id.*, Gen. Staph., p. 205 : Kraatz, Naturg. Ins. Deutschl., ii, p. 44 : Lacord., Gen. Col., ii, p. 45 : Kraatz, Naturg. Ins., ii, p. 44 ; Jacq. Duval, Gen. Col., ii, p. 5, t. 5. f. 21 : Mun. Cat., p. 507 : Sharp, Biol. Centr. Amer., Col., i (2), p. 274 : Leconte & Horn, Class. Col., p. 93.

Stenusa, Kraatz, Naturg. Ins. Deutschl., ii, 1856, p. 47 ; *id.* Berlin Ent. Zeits., 1866, p. 339 : Mun. Cat., p. 507 : Leconte & Horn, Class. Col., p. 93.

ceylonica (*Stenusa*), Kraatz, Linn. Ent., xi, 1857, p. 8 ; *id.*, Wiegm. Arch., xxv (i), p. 10.
Hab. Ceylon.

Genus **OCALEA**.

Erichson, Käfer Mark Brandenb., i, 1837, p. 298 ; *id.*, Gen. Staphyl., p. 60 : Lacord., Gen. Col., ii, p. 38 : Kraatz, Naturg. Ins., ii, p. 49 : Jacq. Duval, Gen. Col., ii, p. 15, t. 2. f. 8 : Mun. Cat., p. 507 : Leconte & Horn, Class. Col., p. 92 : Sharp, Biol. Centr. Amer., Col., i (2), p. 169.

Rheochara, Muls. & Rey, Ann. Soc. Linn. Lyon, (*n. s.*) xxi, 1874, p. 1.

indica, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 12.

Hab. India.

Genus **LEPTUSA**.

Kraatz, Naturg. Ins. Deutschl., ii, 1858, p. 50 : Jacq. Duval, Gen. Col., ii, p. 5, t. 6, f. 27 : Mun. Cat., p. 508 : Leconte & Horn, Class. Col., p. 93.

Ousipalia, Gozis, Récherche, 1886, p. 13.

Pachygluta, Thomson, Skand. Col., i, 1859, p. 32 ; ii, p. 276.

Pasilia, Muls. & Rey, Ann. Soc. Linn. Lyon, (*n. s.*), xix, 1872, p. 316.

Pisalia, Muls. & Rey, *l. c.*, p. 325.

Sipalia, Muls. & Rey, *l. c.*, 1853, 32, t. 2, f. 1, 2 : Thomson, Skand. Col., i, 1859, p. 4, iii, p. 105.

annuliventris, Kraatz, Wiegm. Archiv., xxv (i), 1859, p. 12.

Hab. India.

varicornis, Kraatz, *l. c.*, p. 13.

Hab. Ceylon.

Genus **COENONICA**.

Kraatz, Linn. Ent., xi, 1857, p. 45 : Mun. Cat., p. 510.

puncticollis, Kraatz, *l.c.*, p. 46 : *id.*, Wiegm. Arch., xxv (i), 1859, p. 10, t. 1, f. 3 : Fauvel, Ann. Mus. Civ. Gen., xv, p. 112.

indica (Phloeopora), Motschulsky, Bull. Mosc., xxxi (3) 1858, p. 258.

Hab. India, Ceylon.

Genus **LINOGLOSSA**.

Kraatz, Wiegm. Arch., xxv (i), 1859, p. 10 : Mun. Cat., p. 510.

bifoveolata, Kraatz, *l. c.*, p. 11, t. 1, f. 2.

Hab. India.

Genus **ALEOCHARA**.

Gravenhorst, Col. Micr., 1802, p. 67 : Mannerheim, Brachél., p. 66 : Erichson, Gen. Staph., p. 158 : Lacord., Gen. Col., ii, p. 40 : Kraatz, Naturg. Ins., ii, p. 82 : Jacq. Duval, Gen. Col., ii, p. 12, t. 3, f. 14 : Mun. Cat., p. 512 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 305 : Leconte & Horn, Class. Col., p. 92.

Baryodma, Thomson, Skånd. Col., i, 1859, p. 30 ; ii, p. 249.

Ceranota, Stephens, Ill. Brit. Ent., v. 1832, p. 161.

Copiata, Gozis, Récherche, 1886, p. 12.

Coprochara, Muls. & Rey, Ann. Soc. Linn. Lyon, (*n. s.*) xx, 1872, p. 430.

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Homoeochara, Muls. & Rey, *l. c.*, p. 414.

Hoplonotus, Schmidt Goebel, Stettin Ent. Zeit., 1846, p. 245.
Mecorhopalus, Solier, Gay's Hist. Fis. Chili, Zool, 1851, p. 350.
Polychara, Muls & Rey, *l. c. supra*, p. 348.
Polistoma, Stephens, Man. Brit. Col., 1839, p. 354 : Gozis, Réch., 1886, p. 12.
Xenochara, Muls. & Rey, *l. c. supra*, p. 344.

asiatica, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 15 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 306: Sharp, Ann. Mag. N. H., ii, 1888, p. 281.
japonica, Sharp, Trans. Ent. S. Lond., 1874, p. 8.
Hab. India, Ceylon, Hongkong, Japan, Celebes, Aru Isles.

badia, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 237.
Hab. India.

brunneiventris, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 14.
Hab. India.

castanea, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 239.
Hab. India.

croceipennis, Motschulsky, *l. c.*, p. 238.
maculipennis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 17.
sanguinipennis, Kraatz, *l. c.*, p. 17.
Hab. India, Ceylon, Celebes, Australia.

denticulata, Motschulsky, *l. c. supra*, p. 238.
Hab. India.

haematopyga, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 15.
Hab. Ceylon.

hindustana, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 237.
Hab. India.

minutissima, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 19.
Hab. Ceylon.

mutata, Gemm. & Har. Mun. Cat., 1868, p. 514.
tenuicornis, Motsch., Bull. Mosc., xxv (3), 1858, p. 240 (*nec* Kraatz).
Hab. India.

nigra, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 13 (*nec* Steierm.).
Hab. Ceylon.

postica, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 205.
Hab. Ceylon.

puberula, Klug, Ins. Madagasc., Col., 1833, p. 51 : Erichson, Gen. Staphyl., 1839, p. 165 : Wollaston Cat. Mad. Col., 1857, p. 180; *id.*, Canar. Col., 1864, p. 551 : Kraatz, Wiegm. Archiv., xxv (i), 1859, p. 16 : Rey, Brévip., 1874, p. 60 : Fauvel, Ann. Mus, Civ. Gen., x, 1877, p. 292.
Armitagei, Wollaston, Ins. Mader., Col., 1854, p. 559.
decorata, Aubé, Ann. Soc. Ent. Fr., (2s.) viii, 1850, p. 311.
dubia, Fauvel, *l. c.*, (3s.) iii, 1863, p. 428.
vaga, Erichson, Gen. Staphyl., 1839, p. 172.
Hab. W. Indies, N. America, Europe, Africa, Japan, China, Ceylon, Burma, Java, Sumatra, New Caledonia, Australia.

punctiventris, Kraatz, Wiegm. Archiv., xxv (i), 1859, p. 19.
Hab. Ceylon.

rutilipennis, Kraatz, *l. c., supra*, p. 17.
Hab. Ceylon.

subjecta, Walker, Ann. Mag. N. H., (3s.), 1859, p. 52.
Hab. Ceylon.

translata, Walker, *l. c. supra*, p. 52.
Hab. Ceylon.

trivialis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 18.
Hab. Ceylon.

tuberiventris, Kraatz, *l. c. supra*, p. 14.
Hab. India.

Genus **DINARDA**.

Mannerheim, Brachél., 1830, p. 65 : Boisd. & Lacord., Faune Ent. Paris, i, p. 524 : Lacord., Gen. Col., ii, p. 41 : Jacq. Duval, Gen. Col., ii, p. 10, t. 4, f. 17 : Mun. Cat., p. 517.

serricornis, Walker, Ann. Mag. N. H., (3s) iii, 1859, p. 52.
Hab. Ceylon.

Genus **PORUS**.

Hope, Royle's Himalaya, 1839, p. 54 : Kraatz, Linn. Ent., xi, 1857, p. 21 : Mun. Cat., p. 518 : Fauvel, Rev. d'Ent., viii, 1889, p. 285.

Myrmedonia, pt, Lacordaire, Gen. Col., ii, 1854, p. 285.

ochraceus, Hope, *l.c. supra*, p. 55, t. 9, f. 10 : Erichson, Gen. Staph., p. 43 : Kraatz., Linn. Ent., xi, 1857, p. 21, t. 1. f. 19 ; *id.*, Wiegm. Archiv., xxv (i), p. 20.
ferrugineus, Kraatz, Linn. Ent., 1857, p. 22. E. Soudan, Abyssinia.
Hab. Africa, India, Nepal, Assam, Moradabad (N. W. P.).

Genus **TERMIDONIA**.

Motschulsky, Et. Ent., viii, 1859 (*ined.*) : Mun. Cat., p. 519.

laminata, Motschulsky, *l.c.*, p. 87.
Hab. Ceylon.

Genus **ACANTHOGLOSSA**.

Motschulsky, Et. Ent., viii, 1859, p. 89 (*nec.* Kraatz (1858), Mun. Cat., p. 623=*Stilicopsis*, Sachse).

Glossacantha, Gemm. & Har., Mun., Cat., 1868, p. 519.

badia, Motschulsky, Etud. Ent., viii, 1859, p. 89.
Hab. Ceylon.

humerosa, Motschulsky, *l.c.*, p. 90.
Hab. Ceylon.

Genus **MYRMEDONIA.**

Erichson, Käfer Mark Brand., i, 1837, p. 286 ; *id.*, Gen. Staph., p. 35 : Lacord., pt, Gen. Col., ii, p. 29 : Kraatz, Naturg. Ins., ii, p. 118 : Jacq. Duval, Gen. Col. Eur., ii, 1857 : p. 9, t. l. f. 1-2 : Kraatz, Wiegm. Arch., xxv (i), p. 20 : Mun. Cat., p. 519 : Sharp, Trans. Ent. S. Lond., 1876, p. 52 : *id.*, Biol. Centr. Amer., Col., i (2), p. 198 : Leconte & Horn, Class. Col., p. 92.

? *Drusilla* (Leach), Boisd. & Lacord., Faune Ent. Paris., i, 1835, p. 534.
Myrmelia, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) vi, 1873, p. 86 ; *id.*, Ann. Soc. Linn. Lyon, xx, 1873-4, p. 6.
Myrmoecia, Muls. & Rey, Ann. Soc. Agric. Lyon, 1873, p. 130.
Pelia, Stephens, Ill. Brit. Ent. v, 1832, p. 434 : Gozis, Réch., 1886, p. 12.
Zyras, Stephens, *l.c.*, p. 430 : Man. Brit. Col., p. 350.

affinis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 23.
Hab. Ceylon.

clavicornis, Kraatz, *l.c.*, p. 24, t. l, f. 7.
Hab. Ceylon.

excisa, Kraatz, Linn. Ent., xi, 1857, p. 50 ; *id.*, Wiegm. Arch., xxv (i), p. 50.
Hab. Ceylon, Negambo.

gemina, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 27.
Hab. Ceylon.

hirta, Kraatz, *l.c.*, p. 25, t. l, f. 8.
Hab. Ceylon.

hoplonota, Kraatz, Linn. Ent., xi, 1857, p. 49 ; *id.*, Wiegm. Arch., *l.c.*, p. 22.
Hab. Ceylon, Colombo.

impressicollis, Kraatz, Linn. Ent., 1857, p. 53 ; *id.*, Wiegm. Arch., *l.c.*, p 27.
Hab. Ceylon, Colombo.

lævigata, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 26, t. l. f. 9.
Hab. India.

lineatocollis, Kraatz, *l.c.* p. 26.
Hab. India.

Nietnerii, Kraatz, Linn. Ent., 1857, p. 52 ; *id.*, Wiegm. Arch., *l.c. supra*, p. 26.
Hab. Ceylon, Negambo.

nigrescens (*Astilbus*), Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 262.
Hab. India.

nigriceps, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 22.
Hab. India.

obscura, Fabr., Syst. El. ii, 1801, p. 595 : Erichson, Gen., p. 41.
var. *tricuspidata*, Kraatz, Linn., xi, 1857, p. 49 ; Wiegm. Arch., xxv (i), p. 22.
Hab. India, Ceylon, Colombo.

planaticollis, Kraatz, Linn. Ent., xi, 1857, p. 51 ; *id.*, Wiegm. Arch., *l.c. supra*, p. 25.
Hab. Ceylon, Negambo.

procera, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 20.
Hab. Ceylon.

punctatissima, Kraatz, Linn. Ent., 1857, p. 52 ; *id.*, Wiegm. Arch., *l.c. supra* p. 25.
Hab. Ceylon, Negambo.

rubricollis, Kraatz, Linn. Ent., 1857, p. 51 ; *id.*, Wiegm. Arch., xxv (i), p. 23.
Hab. Ceylon, Negambo.

serraticornis, Kraatz, Linn. Ent., 1857, p. 48 ; Wiegm. Arch., xxv (i), 1859, p. 20.
Hab. Ceylon.

sordida, Kraatz, Wiegm. Arch. *l.c.* p. 23.
Hab. Ceylon.

termiticola, Gestro, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 110.
Hab. Burma.

Genus TETRASTICTA.

Kraatz, Linn. Ent., xi, 1857, p. 4 : Mun. Cat., p. 522.

polita, Kraatz, *l.c.*, p. 55 : Wiegm. Arch., xxv (i), 1859, p. 19, t. 1, f. 6 *a-b*.
Hab. Ceylon.

Genus PELIOPTERA.

Kraatz, Linn. Ent., 1857, p. 55 : Mun. Cat., p. 522.
Termitopora Motschulsky, Et. Ent., viii, 1859, p. 91 : Mun. Cat., p. 546.

adustipennis (*Termitopora*), Motschulsky, Etud. Ent., viii, 1859, p. 93, t. 1. f. 7.
Hab. Ceylon.

micans, Kraatz, Linn. Ent., 1857, p. 56 ; *id.*, Wiegm. Arch., xxv (i), 1859, p. 42, t. 1, f. 4 *a-b*.
Hab. Ceylon.

opaca, Kraatz, *l.c.*, p. 56; *id.*, Wiegm. Arch., *l.c.*, p. 42.
Hab. Ceylon.

Genus OXYPODA.

Mannerheim, Brachél., 1830, p. 69 : Erichson, Gen. Staphyl., p. 141 : Kraatz, Naturg. Ins., ii, p. 158 : Lacord., Gen. Col., ii, p. 35 : Jacq. Duval, Gen. Col., ii, p. 13, t. 3, f. 15 : Mun. Cat., p. 526 : Sharp, Trans. Ent. S. Lond., 1876, p. 68 : Leconte & Horn, Class. Col., p. 92.

Acrostiba, Thomson, Skand. Col , i, 1859, p. 33 ; iii, p. 11.
Bessopora, Thomson, *l.c.*, i, p. 38 ; iii, p. 42.
Bœoglena, Thomson, *l.c.*, ix, 1867, p. 248.
Crataraea, pt., Thomson, *l.c.*, i, 1859, p. 33 ; ii, p. 282.
Demosoma, Thomson *l.c.*, i, p. 37 ; iii, p. 32.
Disochara, Thomson, *l.c.*, i, p. 37 ; iii, p. 30.
Mycetodrepa, Thomson, *l.c.*. i, p. 37 ; iii, p. 28.
Myrmecochara, Kraatz, Linn. Ent., xi, 1857, p. 40.
Podoxya, Muls. & Rey, Ann. Soc. Linn. Lyon, (n.s.) xxi, 1874, p. 152.
Pycnaraea, Thomson, Skand. Col., i. 1859, p. 37 ; iii, p. 28.
Sphenoma, Mannerheim, Brachél., 1830, p. 68.
Tachyusida, Muls. & Rey, Ann. Soc. Linn. Lyon, (n. s.) xix, 1872, p. 278.
Thliboptera, Thomson, Skand. Col., i. 1859, p. 37 ; iii, p. 20.

atriceps, Gemm. & Har., Mun. Cat. 1868, p. 526.
atricapilla, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 244, (*nec* Mäklin).
Hab. India.

brunnescens, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 243.
Hab. India.

lineola, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 27.
Hab. Ceylon.

nigricauda, Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 153.
Hab. Ceylon.

palleola, Motschulsky, l.c., xxxi (3), 1858, p. 245.
Hab. India.

plagiata, Motschulsky, *l.c.* p. 242.
Hab. India.

vilis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 28.
Hab. India.

Genus **HOMALOTA**.

Mannerheim, Brachél., 1830, p. 73 : Erichson, Gen. Staph., p. 80 : Lacord., Gen. Col., ii, p. 32 : Kraatz, Naturg. Ins, ii, p. 192 : Jacq. Duval, Gen. Col., ii, p. 6, t. 3, f. 12 : Mun. Cat., p. 530 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 294 : Sharp, Trans. Ent. S. Lond., 1869, p. 91, 272 ; 1876, p. 60 ; *id.*, Biol. Centr. Amer., Col. i (2), p. 172 : Leconte & Horn, Class. Col., p. 91.

Acrotona, Thomson, Skand. Col., i, 1859, p. 38 ; iii, p. 35.
Aglypha, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) vi, 1873, p. 689.
Alaobia, Thomson, *l.c.*, *supra*, i, p. 40 ; iii, p. 99.
Aloconota, Thomson, *l.c.*, i, p. 36 ; iii, p. 7.
Amidobia, Thomson, *l.c.*, i. p. 34 ; ii, p. 295.
Amischa, Thomson, *l.c.*, i, p. 34 ; ii, p. 292.
Anopleta, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) vii, 1874, p. 46.
Anomognathus, Solier, Gay's Hist. Fis. Chili, iv, 1851, p. 337 : Lacord., Gen. Col., ii, p. 155.
Apimelia, Muls. & Rey, *l.c. supra*, vii, 1874, p. 74.
Atheta, Thomson, Skand. Col., i, 1859, p. 39 ; iii, p. 61.
Badura, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) vi, 1873, p. 311.
Bessobia, Thomson, Skand. Col., i, 1859, p. 38 ; iii, p. 42.
Cerilaxa, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) vi, 1873, p. 413.
Chaetida, Muls. & Rey, *l.c.*, p. 304.
Colpodota, Muls. & Rey, *l.c.*, p. 207.
Coprothassa, Thomson, Skand. Col., i, 1859, p. 38 ; iii, p. 35.
Cryptusa, Muls. & Rey, *l.c. supra*, vii, 1874, p. 119.
Dacrila, Muls. & Rey, *l.c.*, p. 212.
Dadobia, Thomson, Skand. Col., i, 1859, p. 33 ; iii, p. 283.
Datomicra, Muls. & Rey, *l.c. supra*, vi, 1873, p. 387.
Dimetrota, Muls. & Rey, *l.c. supra*, p. 433.
Dinaraea, Thomson, Skand. Col., i, 1859, p. 34 ; ii, p. 289.
Discerota, Muls. & Rey, *l.c. supra*, vii, 1874, p. 340.

Disopora, Thomson, Skand. Col., i, 1859, p. 39 ; iii, p. 57.
Dralica, Muls. & Rey, Ann. Soc. Agric, Lyon, (4s.) vii, 1874, p. 212.
Earota, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s), vi, 1873, p. 154.
Enalodroma, Thomson, Skand. Col., i, 1859, p. 39 ; iii, p. 51.
Geostiba, Thomson, Skand. Col., i, 1859, p. 40 ; iii, p. 104.
Glaphya, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) vi, 1873, p. 678.
Glossola, Fowler, Col. Brit., ii, 1887, p. 66.
Hemitropia, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) vi, 1873, p. 211.
Heteronoma, Muls. & Rey, *l.c.*, vii, 1874, p. 59.
Heterophaena, Arribalzaga, Bol. Acad. Cienc. Cordoba, vii, 1884, p. 45.
Heterota, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) vi, 1873, p. 194.
Hilara, Muls. & Rey, *l.c.*, p. 330.
Hydrosmechta, Thomson, Skand. Col., i, 1859, p. 36 ; iii, p. 13.
Hygraecia, Muls. & Rey, Ann. Soc. Agric. Lyon, vii, 1874, p. 305.
Hypnota, Muls. & Rey, *l.c.*, vi, 1873, i, p. 623.
Liogluta, Thomson, Skand, Col., i, 1859, p. 39 ; iii, p. 54.
Liota, Muls. & Rey, *l.c. supra*, vii, 1874, p. 148.
Lyprocorrhe, Thomson, Skand. Col., i, 1859, p. 41 ; iii, p. 108.
Megista, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) vi, 1873, p. 623.
Meotica, Muls. & Rey, *l.c.*, vii, 1874, p. 96.
Metaxya, Muls. & Rey, *l.c.*, vii, 1874, p. 173.
Microdota, Muls. & Rey, *l.c.* vi, 1873, p. 327.
Mycota, Muls. & Rey, *l.c.*, p. 534.
Ouralia, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) vii, 1874, p. 66.
Pachnida, Muls. & Rey, *l.c.*, vii, 1874, p. 84.
Pelurga, Muls. & Rey, *l.c.*, vi, 1873, p. 609.
Philhygra, Muls. & Rey, *l.c.*, p. 340.
Phryogora, Muls. & Rey, *l.c.*, p. 657.
Plataraea, Thomson, Skand. Col., i, 1859, p. 38 ; iii p. 45.
Platyola, Muls. & Rey, Ann. Soc. Linn. Lyon, (n.s.) xxi, 1874, p. 249.
Polyota, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) vi, 1873, p. 677.
Pycnota, Muls. & Rey, *l.c.*, vi, 1873, p. 409.
Solenia, Muls. & Rey, *l.c.* (4s.) vi, 1873, p. 287.
Taxicera, Muls. & Rey, *l.c.*, vii, 1874, p. 315.
Tetropla, Muls. & Rey, *l.c.*, vi, 1873, p. 524.
Thinobaena, Thomson, *l.c.*, i, p. 39 ; iii, p. 59.
Thinoecia, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) vii, 1874, p. 260.
Traumoecia, Muls. & Rey, *l.c.*, vi, 1873, p. 663.
Xenota, Muls. & Rey, *l.c.*, vi, p. 429.
Zoosetha, Muls. & Rey, *l.c.*, vii, p. 29.

acuticollis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 28, t. 1, f. 10.
Hab. Ceylon.

annuliventris, Kraatz, *l.c.*, p. 40.
Hab. India.

atramentaria, Gyllenhal, Ins. Suec., ii, 1810, p. 408 : Kraatz, Naturg. Ins. Deutschl., p. 303.
aenescens, Zetterstedt, Ins. Lapp., 1840, p. 77, Lapland.
atricornis, Stephens, Ill. Brit. Ent., v, 1832, p. 133. Britain.

consimilis, Stephens, *l.c.*, p. 116. Britain.
Mannerheimii, Sahlberg, Ins. Fenn., i, 1831, p. 380.
Hab. Europe, N. Asia, China.

circellaris, Gravenhorst, Mon. Col Micr., 1806, p. 155 : Kraatz, Naturg. Ins. Deutschl., p. 326 ; *id.*, Wiegm. Arch., xxxv (i), 1859, p. 41.
contigua, Stephens, Ill. Brit. Ent., v, 1832, p. 116. Britain.
rufescens, Stephens, *l.c.*, p. 128. Britain.
Hab. Europe, India.

cursoria, Gemminger & Harold, Mun. Cat., 1868, p. 553.
cursor, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 251.
Hab. India.

dilatipennis, Motschulsky, *l.c. supra*, p. 252.
Hab. India, Bombay.

dilutipennis, Motschulsky, *l.c.*, xxxiv (i), 1861, p. 151.
Hab. Ceylon.

dubia, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 37.
Hab. Ceylon.

exasperata, Kraatz, *l.c.*, p. 32.
Hab. Ceylon.

exigua, Kraatz, *l.c.*, p. 36.
Hab. Ceylon.

fungi, Gravenhorst, Mon. Col. Micr., 1806, p. 157 : Kraatz, Nat. Hist. Deutschl., p. 321 ; *id.*, Wiegm. Arch., xxv (i), p. 20.
infuscata, Stephens, Ill. Brit. Ent., v, 1832, p. 136.
nigriceps, Heer, Faun. Helv., i, 1842, p. 333.
obfuscata, Stephens, Ill. Brit. Ent., v, 1832, p. 135.
Hab. Europe, India, N. America.

inornata, Kraatz, Wiegm. Archiv., xxv (i), 1859, p. 39.
Hab. Ceylon.

inutilis, Kraatz, *l.c.*, p. 35.
Hab. Ceylon.

Kraatzii, *n. n.*
xanthoptera, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 30. (*nec* Stephens).
Hab. India.

lugens, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 257.
Hab. India.

marcida, Erichson, Käfer Mark Brand., i, 1837, p. 328 : Kraatz, Naturg. p. 298 ; *id.*, Wiegm. Archiv., xxv (i), p. 37.
livida, Muls. & Rey, Opusc. Ent., i, 1852, p. 25, t. 1, f. 7 : Kraatz, Naturg., p. 299.
Hab. Europe, Ceylon.

microcephala, Motschulsky, Bull. Mosc., xxxi, (3), 1858, p. 256.
Hab. India.

mucronata, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 29.
Hab. Ceylon.

nana, Kraatz, *l.c.*, p. 36.
Hab. Ceylon.

pelioptera, Kraatz, *l.c.*, p. 30.
Hab. India.

peregrina, Kraatz, *l.c.*, p. 39.
Hab. Ceylon.

platygaster, Kraatz, *l.c.*, p. 33.
Hab. Ceylon.

platysthetoides, Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 152.
Hab. Ceylon.

prona, Motschulsky., *l.c.*, xxxi (3), 1858, p. 252.
Hab. India.

putridula, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 35.
Hab. Ceylon.

rhyssoptera, Kraatz, *l.c.*, p. 37.
Hab. India.

rugatipennis. Kraatz, *l.c.*, p. 40.
Hab. Ceylon.

scrobicollis, Kraatz, *l.c.*, p. 31.
Hab. India.

splendida, Kraatz, *l.c.*, p. 38.
Hab. Ceylon.

suspiciosa, Motschulsky, Etud. Ent., 1859, p. 90.
Hab. Ceylon.

tenuicornis, Motschulsky, Bull. Mosc., xxxi (3), 158, p. 250.
Hab. India.

termitophila, Motschulsky, Etud. Ent., 1859, p. 91.
Hab. Ceylon.

testaceipennis, Motschulsky, Bull, Mosc., xxxi (3), 1858, p. 251.
Hab. India.

tridentata, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 31.
Hab. Ceylon.

tropica, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 256.
Hab. India.

tuberculata, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 32.
Hab. India.

tuberculicollis, Kraatz, *l.c.*, p. 33.
Hab. Ceylon.

variventris, Kraatz, *l.c.*, p. 34.
Hab. Ceylon.

vicaria, Kraatz, *l.c.*, p. 38.
Hab. Ceylon.

Genus **PLACUSA**.

Erichson, Käfer Mark Brand., i, 1837, p. 370; *id.*, Gen. Staph., p. 194: Lacord. Gen. Col., ii, p. 45: Mun. Cat., p. 544: Kraatz, Naturg. Ins., ii, p. 329; Berl. Ent. Zeits., 1868, p. 342: Jacq. Duval, Gen. Col., ii, p. 7, t. 4, f. 16: Sharp, Biol. Centr. Amer., Col., i (2), p. 269: Leconte & Horn, Class. Col., p. 93.
Calpusa, Muls. & Rey, Ann. Soc. Linn. Lyon, (n. s.) xix, 1872, p. 198, 217.
Cyphea, Fauvel, Ann. Soc. Ent. Fr., (4s.) iii, 1863, p. 219, 220.

acuminata, Kraatz, Wiegm. Arch., xxxv (i), 1859, p. 43.
Hab. Ceylon.

pygmæa, Kraatz, *l.c.*, p. 44.
Hab. Ceylon.

spinigera, Kraatz, *l.c.*, p. 43.
Hab. Ceylon.

Genus **PHLOEPORA**.

Erichson, Käfer Mark Brand., i, 1837, p. 314; *id.*, Gen. Staph., p. 76: Lacord., Gen. Col. ii, p. 38: Kraatz, Naturg. Ins., ii, p. 334: Jacq. Duval, Gen. Col., ii, p. 16, t. 2, f. 9: Mun. Cat., p. 545: Sharp, Biol. Centr. Amer., Col., i (2), p. 164: Leconte & Horn, Class. Col., p. 92.

ceylanensis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 41.
Hab. Ceylon.

impressicollis, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 257.
Hab. India.

indica, Motschulsky, *l.c.*, p. 258.
indica, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 42.
Hab. India.

Genus **OLIGOTA**.

Mannerheim, Brachél., 1830, p. 72: Erichson, Gen. Staph., p. 179: Lacord., Gen. Col., ii, p. 39: Mun. Cat., p. 547: Kraatz, Naturg. Ins., ii, p. 346: Jacq. Duval, Gen. Col. ii, p. 17, t. 4, f. 19: Sharp, Biol. Centr. Amer., Col., i (2), p. 293: Leconte & Horn, Class. Col., p. 93.
Holobus, Solier, Gay's Hist. Fis. Chili, iv, 1851, p. 155: Lacord., Gen. Col., ii, p. 155.
Logiota, Muls. & Rey, Mém. Acad. Lyon, xx, 1873-4, p. 1.
Microcera, Mannerheim, Brachél., 1830, p. 72.

chrysopyga, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 45.
Hab. Ceylon.

indica, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 236.
indica, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 44.
Hab. India.

semibrunnea, Kraatz, *l.c.*, p. 45.
Hab. Ceylon.

testacea, Kraatz, *l.c.*, p. 44.
Hab. Ceylon.

Genus **HYGROPTERA**.

Motschulsky, Etud. Ent., 1859, p. 86 : Mun. Cat., p. 584.

castanea, Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 150.
Hab. Ceylon.

termitis, Motschulsky, Etud. Ent., 1859, p. 87, t. 1, f. 9.
Hab. Ceylon.

Genus **GYROPHAENA**.

Mannerheim, Brachél., 1830, p. 74 : Erichson, Gen. Staph., p. 162 : Lacord., Gen. Col., ii, p. 43 : Kraatz, Naturg. Ins., ii, p. 352 : Jacq. Duval, Gen. Col. Eur., ii, 1857, p. 18, t. 4, f. 20 : Mun. Cat., p. 548 : Muls. & Rey, Hist. Nat. Col. France, Brévip., 1871, p. 17 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 289 : Sharp, Trans. Ent. S. Lond., 1876, p. 72 ; *id.*, Biol. Centr. Amer. Col., i (2), p. 254 : Leconte & Horn, Class. Col., p. 73.
Agaricochara, Kraatz, Naturg. Ins., ii, 1857, p. 361 : Mun. Cat. p. 549.
? Encephalus, Westwood, Guérin's Mag. Zool., 1838, cl. ix, t. 69 : Mun. Cat., p. 548.
Phaenogyra, Muls. & Rey, Ann. Soc. Linn. Lyon, (n. s.) xix, 1872, p. 166.

appendiculata, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 228.
laminata, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 45.
Hab. India.

cicatricosa, Motschulsky, *l.c.*, p 231.
granulifera, Kraatz, Wiegm. Arch., xxv (i) 1859, p. 48.
Hab. Ceylon.

curtula, Motschulsky, Etud. Ent., 1859, p. 85.
nigra, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 49 (*nec* Motsch.).
Hab. Ceylon.

furcata (*Encephalus*), Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 227.
humeralis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 46.
indica, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 230.
Hab. India.

immatura, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 47.
Hab. Ceylon.

livida, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 231.
oxyteloides, Motschulsky, Etud. Ent., 1859, p. 85.
pygmæa, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 49.
Hab. India.

nigra, Motschulsky, Etud. Ent., 1859, p. 85.
Hab. Ceylon.

pallipes, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 47.
Hab. Ceylon.

rigida, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 230.
Hab. India.

trifida, Motschulsky, Etud. Ent., 1859, p. 84.
Hab. Ceylon.

Genus **BRACHIDA**.

Mulsant & Rey, Ann. Soc. Linn. Lyon, (n. s.) xix, 1872, p. 94; Col. France Brévip., Aléoch., p. 4, t. 2, f. 14-18: Fauvel, Faun. Gall. Rhén., iii, p. 646, t. 6, f. 16: Sharp, Trans. Ent. S. Lond., 1876, p. 48; *id.*, Biol. Centr. Amer., Col., i (2), p. 265.

crassiuscula (*Homalota*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 41.
Hab. Ceylon.

Genus **CAMACOPALPUS**.

Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 231.
Camacopselaphus, Mun. Cat., p. 549.

bituberculatus, Motschulsky, *l.c.*, p. 233, t. 1, f. *r*.
Hab. India.

flavicornis, Motschulsky, *l.c.*, p. 233.
Hab. India.

fulvus, Motschulsky, *l.c.*, p. 234.
Hab. India.

Genus **PRONOMAEA**.

Erichson, Käfer Mark Brand., i, 1837, p. 252: Lacord., Gen. Col., ii, p. 46: Kraatz, Naturg. Ins., ii, p. 364: Jacq. Duval, Gen. Col., ii, p. 20, t. 5, f. 24: Mun. Cat., p. 550.

bramina, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 224.
Hab. India.

subrufa, Motschulsky, *l.c.*, xxxiv (i), 1861, p. 149.
Hab. Ceylon.

Genus **MYLLAENA**.

Erichson, Käfer Mark Brand., i, 1837, p. 382; *id.*, Gen. Staph., p. 209: Lacord. Gen. Col., ii, p. 48: Kraatz, Naturg. Ins., ii, p. 367: Jacq. Duval, Gen. Col., ii, p. 20, t. 8, f. 39: Mun. Cat., p. 550: Fauvel, Ann. Mus. Civ. Gen., xii, p. 288: Sharp, Biol. Centr. Amer., Col., i (2), p. 285: Leconte & Horn, Class. Col., p. 94.
Centroglossa, Mathews, Ent. Mag., v, 1838, p. 194.

apicalis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 51.
Hab. Ceylon.

lateritia, Kraatz, *l.c.*, p. 50.
Hab. Ceylon.

nitidula, Kraatz, *l.c.*, p. 50.
Hab. Ceylon.

Genus **DINOPSIS**.

(*Deinopsis*) Mathews, Ent. Mag., v, 1838, p. 193 : Kraatz, Naturg. Ins., ii, p. 374 : Mun. Cat., p. 551 : Jacq. Duval, Gen. Col., ii, p. 21, t. 5, f. 25 : Fauvel, Ann. Mus. Civ. Gen., xv, p. 597 : Sharp, Biol. Centr. Amer., Col., i (2), p. 294 : Leconte & Horn, Class. Col., p. 94.

cinnamomea, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 51.
Hab. Ceylon.

Genus **LEUCOCRASPEDUM**.

Kraatz, Wiegm. Arch., xxv (i), 1859, p. 51 : Mun. Cat., p. 552.
Euryglossa, Motschulsky, Etud. Ent., 1859, p. 82 : Mun. Cat., p. 551.

pulchellum, Kraatz, Wiegm. Arch., *l.c. supra*, p. 53, t. 1, f. 12 *a-e*.
flavocinctum (*Euryglossa*), Motschulsky, Etud. Ent., 1859, p. 84, t. 1, f. 8.
Hab. Ceylon.

TACHYPORINI:—(*Tachyporides*) Lacord., Gen. Col., ii, 1854, p. 49 : Jacq. Duval, Gen. Col., ii, p. 22 : Mun. Cat., p. 552 : Thomson, Skand. Col., iii, p. 146 : Pandellé, Ann. Soc. Ent. Fr., (4s.) ix, 1869, p. 261 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 276 : Horn, Trans. Amer. Ent. S., vi, 1878, p. 81 : Leconte & Horn, Class. Col., p. 99.

Genus **XENEDUS**.

Rey, Rev. d'Ent., v., 1886, p. 254.

retractus, Rey, *l. c.*, p. 255.
Hab. Sumatra.

Genus **HYPOCYPTUS**.

Mannerheim (*Hypocypthus*), Brachél., 1830, p. 58 : Erichson (*Hypocyptus*), Käfer Mark Brand., 1837, p. 387 ; *id.*, Gen. Staph., p. 214 : Boisd. & Lacord., Faun. Ent. Paris, i, p. 519 : Lacord., Gen. Col., ii, p. 51 : Jacq. Duval, Gen. Col., ii, p. 22, t. 9, f. 42 : Mun. Cat., p. 552 : Pandellé, Ann. Soc. Ent. Fr., (4s.) ix, 1869, p. 268 : Sharp, Biol. Centr. Amer., Col., i (2), p. 297 : Leconte & Horn, Class. Col., p. 100.
Cypha, Stephens, Ill. Brit. Ent., v, 1832, p. 187.

glaber, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 53.
Hab. Ceylon.

Genus **CILEA**.

Jacq. Duval, Gen. Col. Eur., ii, 1858, p. 25, t. 9, f. 45 : Fauvel, Bull. Soc. Linn. Norm., x, 1866, p. 246 ; *id.*, Faun. Gall. Rhén., iii, p. 591 : Pandellé, Ann. Soc.

Ent. Fr., (4s.) ix, 1869, p. 277 : Sharp, Biol. Centr. Amer., Col., i (2), p. 308 : Leconte & Horn, Class. Col., p. 100.

Cilea, pt, Fauvel, Ann. Mus. Civ. Gen., x, 1877, p. 278.

Leucoparyphus, Kraatz, Naturg. Ins. Deutschl., ii, 1858, p. 393 : Mun. Cat., p. 553.

marginicollis, Kraatz, Naturg. Ins. *l. c.*, p. 394 ; *id.*, Wiegm. Arch., xxv (i), p. 53.
Hab. N. India, Ceylon.

Genus **TACHINODERUS.**

Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 217 : Mun. Cat., p. 556 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 276 : Sharp, Biol. Centr. Amer., Col., i (2), p. 307.

Tachinomorphus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 54.

fulvipes (*Tachinus*), Erichson, Gen. Staph., 1840, p. 921 : Kraatz, *l. c. supra*, p. 55, note.

sanguinolentus (*Tachinus*), Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 216.

vittatus (*Tachinomorphus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 55.

Hab. India, Penang, Sumatra, Borneo, Java.

longicornis, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 218, t. 1, *f. p.*
Hab. India.

Genus **ERCHOMUS.**

Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 218 : Mun. Cat., p. 556 : Horn, Trans. Amer. Ent. S., vi, p. 107 : Sharp, Biol. Centr. Amer., Col., i (2), p. 298 : Leconte & Horn, Class. Col., p. 100.

Cilea, pt, Fauvel, Ann. Mus. Gen., xii, p. 110.

Coproporus, Kraatz, Naturg. Ins. Deutschl., ii, 1857, p. 399 : Sharp, Trans. Ent. S. Lond., 1876, p. 81.

Tachinus, fam. i, pt, Erichson, Gen. Staph., 1840, p. 244.

atomus (*Coproporus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 58.
Hab Ceylon.

brunnicollis, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 220.

punctipennis (*Coproporus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 57.
Hab. India.

fasciipennis (*Coproporus*), Kraatz, *l. c.*, p. 59.
Hab. Ceylon.

flavicornis (*Coproporus*), Kraatz, *l. c.* p. 56.
Hab. India.

granulum, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 221.
Hab. India.

laevigatus, Motschulsky, *l. c.*, p. 219.
Hab. India.

laeviuscula, Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 280.
Hab. Java, Aru Isles, New Guinea.

latus, Motschulsky, *l. c.*, p. 219, t. 1, f. *g*.
spectabilis (*Coproporus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 55.
Hab. India.

limbifer, Motschulsky, *l. c.*, *supra*, p. 222.
tachyporoides (*Coproporus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 60.
Hab. India.

melanarius, Erichson, Gen. Staph., 1840, p. 252.
Hab. Bengal.

minimus, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 220.
pygmaeus (*Coproporus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 58.
Hab. India, Ceylon, Celebes.

rubiginosus, Motschulsky, *l. c. supra*, p. 221.
castaneipennis (*Coproporus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 60.
Hab. India, Ceylon.

rufus (*Coproporus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 59.
fulvus, Motschulsky (*nec* Sahlb.), *l. c. supra*, p. 220.
Hab. India.

sanguinolentus, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 220.
Hab. India.

subdepressus (*Coproporus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 57 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 284.
Hab. Ceylon, Celebes, New Guinea.

subpunctulatus, Motschulsky, Etud. Ent., 1859, p. 81.
Hab. India.

tantillus, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 221.
Hab. India.

Genus **TACHYPORUS**.

Gravenhorst, Mon. Col. Micr., i, 1806, p. 1 : Erichson, Gen. Staph., p. 231 ; Käfer Mark Brand., p. 392 : Pandellé, Ann. Soc. Ent. Fr., (4s.) ix, 1869, p. 273 : Lacord. Gen. Col., ii, p. 54 : Jacq. Duval, Gen. Col., ii, p. 24, t. 9, f. 44 : Mun. Cat., p. 557 : Sharp, Biol. Centr. Amer., Col., i (2), p. 311 : Leconte & Horn, Class. Col., p. 100.
Lamprinus, Heer, Faun. Helv., i, 1842, p. 286.

brunneus (*Oxyporus*), Fabr., Ent. Syst., i (2), 1792, p. 535 ; Syst. Eleuth., ii, p. 607 : Erichson, Gen. Staph., p. 241 : Kraatz, Naturg. Ins. Deutschl., ii, p. 427 : *id.*, Wiegm. Arch., xxv (i), p. 61.
angustatus, Stephens, Ill. Brit. Ent., v, 1832, p. 178.
basalis, Stephens, *l. c.*, p. 179.
faber, Say, Trans. Am. Acad. Sci. Phil., iv, p. 468.
flavicornis, Stephens, *l. c. supra*, p. 177.
gracilis, Stephens, *l. c.*, p. 179.
libens, Stephens, *l. c.*, p. 179.
minimus, Stephens, *l. c.*, p. 178.
nitidulus, Olivier, Ent., iii, 42, 1795, p. 34, t. 3, f. 28.
nitidus, Stephens, *l. c. supra*, p. 177.

pusillus, Stephens, *l. c.*, p. 180.
pyrrhoceras, Stephens, *l. c.*, p. 180.
thoracicus, Stephens, *l. c.*, p. 180.
var. *abdominalis*, Gravenhorst, Microp. Brunsv., 1802, p. 127.
„ *chloroticus*, Kolenati, Mel. Ent., iii, 1846, p. 12.
„ *scutellaris*, Lacordaire, Faun. Ent. Paris., i, 1835, p. 517.
„ *testaceus*, Stephens, *l. c. supra*, p. 177.
Hab. N. America, Europe, India.

***chrsyomelinus**, Linn., Faun. Suec., 1746, no 855; *id.* Syst. Nat., *ed.*, 12, ii, p. 685: Fabr., Syst. Eleuth., ii, p. 606: Olivier, Ent., iii (42), p. 35, t. 3, f. 22: Latreille, Gen. Crust. Ins., x, p. 7, t. 79, f. 9: Kraatz, Naturg. Ins. Deutschl, ii, p. 421.
dispar, var. *a*, Paykull, Faun. Suec., iii, 1800, p. 423. Sweden.
melanocephalus, Fabr., Ent. Syst., i (2), 1792, p. 534; Syst. Eleuth., ii, p. 607. Germany.
merdarius, Panzer, Ent. Germ., p. 360: Marsham, Ent. Brit., p. 521. Britain.
Hab. Europe, [*Ind. Mus.*, Pamir].

dilutus, Motschulsky, Etud. Ent., 1859, p. 80.
Hab. Ceylon.

evanescens, Boheman, Freg. Eug. Resa, Col., 1858, p. 26.
Hab. China.

Genus **CONOSOMA**.

Kraatz, Naturg. Ins. Deutschl., ii, 1858, p. 431: Horn, Trans. Amer. Ent. S., vi, p. 108: Sharp, Biol. Centr. Amer., i (2), p. 313: Leconte & Horn, Class. Col., p. 100.
Conurus, Stephens, Ill. Brit. Ent., v, 1832, p. 188 (*nom. praeoc.*): Erichson, Gen. Staph., p. 218: Lacord., Gen. Col., ii, p. 53: Pandellé, Ann. Soc. Ent. Fr., (4s.) ix, 1869, p. 272: Jacq. Duval, Gen. Col., ii, p. 23, t. 9, f. 43: Mun. Cat., p. 560: Fauvel, Faun. Gall. Rhén., iii, p. 600; *id.*, Ann. Mus. Civ. Gen., xii, p. 286.

biguttatus (*Conurus*), Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 222.
distigma Kraatz, Wiegm. Arch., xxv (i), 1859, p. 61.
Hab. India.

brevipennis, Motschulsky, Etud. Ent., 1859, p. 82.
Hab. Ceylon.

ceylanensis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 62.
Hab. Ceylon.

cinctus (*Conurus*), Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 223.
Hab. India.

gracilis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 62.
Hab. Ceylon.

pictipennis, Kraatz, *l. c.*, p. 63.
Hab. Ceylon.

rufus, Kraatz, *l. c.*, p. 63.
Hab. N. India.

Genus **BOLITOBIUS.**

Mannerheim, Brachél., 1830, p. 18: Stephens, Ill. Brit. Ent., v, 1832, p. 171: Erichson, Gen. Staph., p. 268: Jacq. Duval, Gen. Col., ii, p. 27, t. 10, f. 49: Mun. Cat., p. 562: Pandellé, Ann. Soc. Ent. Fr., (4s.) ix, 1869, p. 279: Gozis, Réch., 1886, p. 13: Sharp, Biol. Centr. Amer., Col., i (2), p. 316: Leconte & Horn, Class. Col., p. 101.

Boletobius, Lacord., Gen. Col., ii, p. 57: Kraatz, Wiegm. Arch. (i), 1859, p. 63.
Bryocharis, Boisd. & Lacord., Faun. Ent. Paris., i, 1835, p. 502.
Lordithon, Thomson, Skand. Col., i, p. 47; iii, p. 71, 1859.
Megacronus, Stephens, Ill. Brit. Ent., v, 1832, p. 165.

nitidus, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 215.
bimaculatus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 63.
Hab. India, Ceylon.

Genus **MYCETOPORUS.**

Mannerheim, Brachél., 1830, p. 62: Erichson, Gen. Staph., p. 281: Mäklin, Symb. Spec. Mycet., 1847: Lacord., Gen. Col., ii, p. 59; Pandellé, Ann. Soc. Ent. Fr., (4s.) ix, 1869, p. 332: Jacq. Duval, Gen. Col., ii, p. 28, t. 11, f. 51: Mun. Cat., p. 564: Sharp, Biol. Centr. Amer., Col., i (2), p. 320: Leconte & Horn, Class. Col., p. 101.

Ischnosoma, Stephens, Ill. Brit. Ent., v, 1832, p. 168.
Myterowis, Gozis, Réch., 1886, p. 14.

braminus, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 215.
Hab. India.

testaceus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 64.
Hab. India.

STAPHYLININI:—(*Staphylinides*) Lacordaire, Gen. Col., ii, 1854, p. 61: Jacq. Duval, Gen. Col., ii, p. 29: Mun. Cat., p. 565: Fauvel, Ann. Mus. Civ. Gen., xii, p. 238: Leconte & Horn, Class. Col., p. 95.
Fissilabres, Latreille, Nordmann, &c.

Genus **TANYGNATHUS.**

Erichson, Käfer Mark Brand., i, 1837, p. 417; *id.*, Gen. Staph., p. 288: Lacord., Gen. Col., ii, p. 60: Kraatz, Naturg. Ins. Deutschl., ii, p. 477: Jacq. Duval, Gen. Col., ii, p. 29, t. 11, f. 52: Mun. Cat., p. 565: Sharp, Trans. Ent. S. Lond., 1876, p. 96; *id.*, Biol. Centr. Amer., Col., i (2), p. 321: Leconte & Horn, Class. Col. p. 95.

fuscus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 65.
Hab. India.

piceus, Motschulsky, Bull. Mosc, xxxi (3), 1858, p. 213.
Hab. India.

pictus, Motschulsky, *l. c.*, p. 213.
Hab. India.

ruficollis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 64.
Hab. Ceylon.

Genus **ACYLOPHORUS.**

Nordmann, Symb. Mon. Staph., 1837, p. 127, t. 1, f. 19 : Erichson, Gen. Staph., p. 519 : Lacord., Gen. Col., ii, p. 84 : Jacq. Duval, Gen. Col., ii, p. 38, t. 15, f. 75 : Mun. Cat., p. 566 : Sharp, Trans. Ent. S. Lond., 1876, p. 97 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 324 : Leconte & Horn, Class. Col., p. 95.
Rhygmacera, Motschulsky, Bull. Mosc., xviii (i), 1847, p. 40 ; *id.*, *ib.*, (2), 1858, p. 656.

flavipes, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 657.
Hab. India.

furcatus, Motschulsky, *l. c.*, p. 657.
Hab. India.

ruficollis, Motschulsky, *l. c.* p. 657 : ? Kraatz, Wiegm. Arch., xxv (i), 1859, p. 65.
Hab. India.

Genus **EURYPORUS.**

Erichson, Käfer Mark Brand., i, 1837, p. 496 ; *id.*, Gen. Staphyl., p. 553 : Lacord., Gen. Col., ii, p. 86 : Jacq. Duval, Gen. Col., ii, p. 39, t. 16, f. 76 : Mun. Cat., p. 566 : Leconte & Horn, Class. Col., p. 96.
Pelecyphorus, Nordmann, Symb., 1837, p. 13, t. 1, f. 5.

argentatus, Fauvel, Notes Leyden Mus., ii, 1881, p. 164.
Hab. Sumatra.

flavipes, Fauvel, *l. c.*, vi, 1884, p. 241.
Hab. Sumatra.

Genus **HETEROTHOPS.**

Stephens, Ill. Brit. Ent., v, 1832, p. 256 : Erichson, Gen. Staph., p. 515 : Lacord., Gen. Col., ii, p. 83 : Jacq. Duval, Gen. Col., ii, p. 38, t. 15, f. 74 : Mun. Cat., p. 567 : Fauvel, Faun. Gall. Rhén., iii, p. 535 : Rye, Ent. Mon. Mag., iv, p. 256 : Sharp, Biol. Centr. Amer., Col., i (2), p. 323 : Leconte & Horn, Class. Col., p. 95.
Trichopygus, Nordmann, Symb. Mon. Staph., 1837, p. 137.

***dissimilis**, Gravenhorst, Micr Brunsv., 1802, p. 125 : Kraatz, Nat. Ins. Deutschl., ii, p. 485.
minutus, Wollaston, Ann. Mag. N. H., (3s.) vi, 1860, p. 53 ; *id.*, Trans. Ent. S. Lond., 1871, p. 298.
subuliformis, Gyllenhal, Ins. Suec., ii, 1810, p. 312.
Hab. Europe, Sweden [*Ind. Mus.*, Leh].

flavicollis, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 660.
Hab. India.

quadripunctula, Gravenhorst, Mon. Col. Micr., 1806, p. 24 : Kraatz, Naturg. Ins. Deutschl., ii, p. 486.

pumilio, Nordmann, Symb. Mon. Staph., 1836, p. 138. Russia.
subuliformis, Zetterstedt, Faun. Lapp., i, 1840, p. 72. Lapland.
Hab. Europe [*Ind. Mus.* Murree].

Genus **CYRTOTHORAX.**

Kraatz, Berlin. Ent. Zeits., 1858, p. 366 : Mun. Cat., p. 567 : Fauvel, Bull. Soc. Linn. Norm., (3s.) ii, 1878, p. 166 : Sharp, Biol. Centr. Amer., Col., i (2), p. 340.

carnifex, Fauvel, Bull. Soc. Linn. Norm., (3s) ii, 1878, p. 166.
Hab. Cambodia.

vulneratus, Fauvel, *l. c.*, p. 165.
Hab. Cochin China.

Genus **QUEDIUS.**

(Leach) Stephens, Ill. Brit. Ent., v, 1832, p. 215 : Erichson, Gen. Staph., p. 523 : Jacq. Duval, Gen. Col., ii, p. 37, t. 15, f, 72, 73 : Lacord., Gen. Col., ii, p. 84 : Mun. Cat., p. 568 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 272 : Sharp, Biol. Centr., Amer., Col., i (2), p. 328 : Leconte & Horn, Class. Col., p. 95.
Ediquus, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) viii, 1876, p. 618.
Microsaurus, Stephens, Ill. Brit. Ent., v, 1832, p. 435.
Raphirus, Stephens, *l. c.*, v, 1832, p. 201.
Sauridus, Muls. & Rey, *l. c. supra*, p. 700.
Velleius, Mannerheim, Brachél., 1830 : *Stephens*, *l. c. supra*, p. 435.

chlorophanus, Erichson, Gen. Staph., 1840, p. 532 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 66.
Hab. Bengal.

cruentus *(Staphylinus)*, Olivier, Ent., iii (42), 1795, p. 27, t. 5, f. 49 : Kraatz, Naturg. Ins., p. 495 ; *id.*, Wiegm. Arch., xxv (i), 1859, p. 67.
astolicus, Kraatz, Berlin. Ent. Zeits., 1858, p. 58, Greece.
analis, Stephens, Ill. Brit. Ent., v, 1832, p. 435, Britain.
erythropterus, Stephens, *l. c.*, p. 226, France.
fulgidus, Marsham, Ent. Brit., 1802, p. 503, Britain.
haemorrhous, Stephens, *l. c. supra*, p. 217, Britain.
Hab. Britain, Europe, India.

fulgidus *(Staphylinus)*, Fabr., Mant. Ins., i, 1787, p. 220 ; Ent. Syst., i (2), p. 525 ; Syst. Eleuth., ii, p. 596 : Erichson, Käfer Mark Brand., i, p. 486 : Kraatz, Naturg. Ins., p. 492 ; *id.*, Wiegm. Arch., xxv (i), 1859, p. 67 : Schiödte, Nat. Tidsskr., 1864, p. 205, t. 10, f. 17-22 : Mun. Cat., p. 569 : Fauvel, Faun. Gall. Rhén., iii, p. 505.
arvernicus, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) viii, 1876, p. 613.
nitidus, Gravenhorst, Micr. Brunsv., 1802, p. 31. Europe.
rufithorax, Muls. & Rey, *l. c. supra*, p. 661.
variabilis, Gyllenhal, Ins. Suec., ii, 1810, p. 303. Sweden.
var. *assimilis*, Nordmann, Symb. Mon. Staph., 1836, p. 78. Russia.
,, *atripennis*, Stephens, Ill. Brit. Ent., v, 1832, p. 436. Britain.
,, *bicolor*, Redtenbacher, Faun. Austr., 1849, p. 710. Germany.

var. *erythrogaster*, Mannerheim, Bull. Mosc., xxv (2), 1852, p. 314. Sitka.
„ *floralis*, Lacordaire, Faun. Ent. Paris., i, 1835, p. 380. Styria.
„ *Fuchsii*, Scriba, Berlin. Ent. Zeits., 1866, p. 378 : Fauvel, l'Abeille, vii, p. 136. Rome.
„ *fuscipennis*, Block, Verzeichn. Ins. Plauen, 1799, p. 116, t. 4, f. 4. Russia.
„ *groenlandicus*, Zetterstedt, Faun. Ins. Lapp., 1828, p. 61. Lapland.
„ *haemopterus*, Stephens, Ill. Brit. Ent., v, 1832, p. 217. Britain.
„ *iracundus*, Say, Trans. Am. Acad. Sci. Phil., iv p. 449. N. Amer.
„ *laetus*, Faldermann, Fauna Ent. Transc., i, 1836, p. 127. Armenia.
„ *mesomelinus*, Marsham, Ent. Brit., 1802, p. 510. Britain.
„ *nigricornis*, Stephens. Ill. Brit. Ent., v, 1832, p. 222. Britain.
„ *occultus*, Lacordaire, Faun. Ent. Par., i, 1835, p. 379. France.
„ *ochripennis*, Ménétriés, Cat. raisonné, 1832, p. 145 (=*quadripunctatus*, Thomson) Talyk.
„ *peranxius*, Muls & Rey, Ann. Soc. Agric. Lyon, (4s.) xiii, 1876, p. 613.
„ *rufitarsis*, Marsham, Ent. Brit., 1802, p. 512. Britain.
„ *skrimshiranus*, Stephens, Ill. Brit. Ent., v, 1832, p. 225. Britain.
„ *virens*, Rottenberg, Berlin. Ent. Zeits., xiv, 1870, p. 28. Sicily.
Hab. Europe, N. India, Java, Australia, N. America.

pectoralis, Boheman, Freg. Eug. Resa., Col., 1858, p. 31.
Hab. China.

spectabilis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 66.
Hab. N. India.

Genus **NADDIA**.

Fauvel, Col. Hefte, ii, 1867, p. 117 : Mun. Cat., p. 574.
Caranistes, Erichson, Gen. Staph., 1840, p. 925.

Westermannii (*Caranistes*), Erichson, Gen. Staph., 1840, p. 925 : Kraatz, Wiegm. Arch., xxvi (i). 1859, p. 72.
Hab. Bengal.

Genus **PALAESTRINUS**.

Erichson, Gen. Staph., 1840, p. 343 : Lacord., Gen. Col., ii, p. 74 : Mun. Cat., p. 574.

mutillarius, Erichson, Gen. Staph., 1839, p. 924 : Kraatz, Wiegm., Arch., xxvi (i), p. 72.
Hab. Bengal.

Sykesii, Erichson, *l. c.*, *supra* p. 344 : Kraatz, *l. c. supra*, p. 71, t. 2, f. 1. *a-b*.
Hab. India.

Genus **EMUS**.

Curtis, Brit. Ent. xii, 1825, t. 534 : Jacq. Duval, Gen. Col., ii, p. 34, t. 13, f. 61 : Mun. Cat., p. 575 : Fauvel, Ann. Mus. Civ. Gen., x, 1877, p. 249 ; *ib.*, xii, p. 248.
Oreophilus, Mannerheim, Brachèl., 1830, p. 20 : Kraatz, Naturg. Ins. Deutschl., ii, p. 528 : Jacq. Duval, Gen. Col., ii, p. 34, t. 13, f. 62 : Mun. Cat., p. 575 : Fauvel, Tijds. v. Ent., xviii, 1875, p. 53 : Sharp, Biol. Centr. Amer., Col., i (2), p. 370 : Leconte & Horn, Class. Col., p. 96.

erythrocephalus (*Staphylinus*), Fabr., Syst. Ent., 1775, p. 265; Spec. Ins., i, p. 335; Mant. Ins., i, p. 220; Ent. Syst., i (2), p. 523; Syst. Eleuth., ii, p. 593: Olivier, Ent., iii, 42, p. 12, t. 2, f. 9: Erichson, Gen. Staph., p. 351: Fauvel, Tijds. v. Ent., xviii, 1875, p. 56; *id.*, Ann. Mus. Civ. Gen., x, 1877, p. 249.
Hab. Australia, Tonga, Tahiti, New Caledonia [*Ind. Mus.* India.]

insularis, Fauvel, Ann. Mus. Civ. Gen., xv, 1879-80, p. 94.
Hab. Sumatra.

maxillosus, Linn., Faun. Suec., 1746, p. 230, no 841: Donovan, Brit. Ins., iii, t. 96, p. 3: Fabr., Syst. Eleuth., ii, p. 592: Erichson, Gen. Staph., p. 348: Kraatz, Naturg. Ins. Deutsch., ii, p. 529; *id.*, Wiegm. Arch., xxv (i), 1859, p. 68: Jacq. Duval, Gen. Staph., t. 13, f. 62: Chapuis & Cand., Mém Liège, 1853, p. 399, t. 2, f. 1: Mun. Cat., p. 575: Fauvel, Tijds. v. Ent., xviii, p. 53.
[Fauvel, *l.c.*, *supra*, would make *ciliaris*, Stephens, the type, as *maxillosus*, Linn., is the most aberrant of the varieties].
anonymus, Sulzer, Kenntz. Ins. nach Linn., 1761, p. 17, t. 7, f. 49. Switzerland.
arcticus, Erichson, Gen. Staph., 1840, p. 348: Solsky, Bull. Mosc., xlii (2), 1868, p. 260. Kamtschatka.
balteatus, De Geer, Mém., iv, 1774, p. 18, t. 1, f. 7-8, Europe.
bicinctus, Eschscholtz, Bull. Mosc., xvi (2), 1843, p. 229: Solsky. *ib.* xlii (2), 1868 p. 262, Russ. America.
cinerarius, Erichson, Gen. Staph., 1840, p. 350: Sharp, Trans. Ent. S. Lond., 1874, p. 27. Egypt.
fasciatus, Füssly, Verzeichn. Schw. Ins., 1775, p. 21: ? Lap. de Casteln., Etud. Ent., i, p. 111 ♀, Europe.
nebulosus, Geoffroy, Fourcroy, Ent. Paris., i, 1785, p. 165, France.
var. { *ciliaris*, Stephens, Ill. Brit. Ent., v, 1832, p. 202: Erichson, Germar's Zeitschr., iii, p. 408, Britain.
var. { *fulvago*, Motschulsky, Schrenck's Reise, ii 1860, p. 120: Solsky, Hor. Soc. Ent. Ross., vii, 1871, p. 346; viii, p. 158, Mongolia.
var. { *imbecillus*, Sharp, Trans. Ent. S. Lond., 1874, p. 28. Japan.
" *medialis*, Sharp, *l.c.* p. 28, Japan.
" *orientalis*, Motschulsky, Etud Ent., 1857, p. 67: Solsky, Hor. Ent. Ross., vii 1871, p. 346; viii, p. 158. E. Siberia,
" *subfasciatus*, Sharp, Trans. Ent. S. Lond., 1874, p. 28.
" *villosus*, Gravenhorst, Micr. Bruns., 1802, p. 160: Erichson, Gen. Staph., p. 349: Nordmann, Symb. Mon. Staph., p. 319: Sharp, Biol. Centr. Amer., Col., i (2), p. 370.
Hab. Europe, America, N. Africa, Japan, China, Mongolia, Siberia, N. India [*Ind. Mus.* Kogyar, Leh].

villipennis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 67.
Hab. India, Dekhan; Borneo.

Genus **LEISTOTROPHUS.**

Perty, Delect. Anim., 1830, p. 30: Kraatz, Naturg. Ins, ii, p. 532: Mun. Cat., p. 576: Fauvel, Ann. Mus. Civ. Gen., xii, p. 249: Sharp, Biol. Centr. Amer., Col., i (2), p. 371: Leconte & Horn, Class. Col., p. 96.

Discocephalus, Nordmann, Symb., 1837, p. 8.
Staphylinus, pt. 5, 6, Erichson, Lacord. Gen. Col., ii, p. 76.
Trichoderma, Stephens, Ill. Brit. Ent., v, 1832, p. 435.

marmoratus (*Staphylinus*), Erichson, Gen. Staph., 1839, p. 826 : Kraatz, Wiegm. Arch., xxv (i), p. 68.
Hab. Tenasserim, Ceylon, Java.

tenuicornis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 68.
Hab. N. India [*Ind. Mus.*————].

Genus **TRICHOCOSMETES.**

Kraatz, Wiegm. Arch., xxv (i), 1859, p. 69 : Mun. Cat., p. 577.

leucomus (*Staphylinus*), Erichson, Gen. Staph., 1839, p. 362 : Kraatz, *l.c.*, *supra*, p. 70, t. 2, f. 2 *a. b.*

cinctus (*Staphylinus*), Redtenbacher, Hügel's Kaschm., iv (2), 1844, p. 504, t. 23, f. 6.
Hab. Nepal, N. India.

Genus **EUCIBDELUS.**

Kraatz, Wiegm. Arch., xxv (i), 1859, p. 70 : Mun. Cat., p. 577.

gracilis, Kraatz, *l.c.*, *supra*, p. 71, t. 2, f. 3 *a-b*.
Hab. N. India.

Genus **RHYNCHOCHILUS.**

Sharp, Ann. Mag. N. H. (6s.) ii, 1888, p. 220, note.

aureus (*Staphylinus*), Fabr., Mant. Ins., i, 1787, p. 219 ; Ent. Syst., i (2), p. 519 ; Syst. Eleuth., ii, p. 589 : Olivier, Ent., iii, 42, p. 7, t. 1, f. 2 : Erichson, Gen. Staph., p. 344 ; Kraatz, Wiegm. Arch., xxv (i), 1859, p. 74, note.
Hab. Assam, Siam, Cochinchina [*Ind Mus.*, Sibságar].

pectoralis, Sharp, Ann. Mag. N. H., (6s.) ii, 1888, p. 120, note.
Hab. Singapur, Malacca, Borneo, Sumatra.

Genus **STAPHYLINUS.**

Linn., Syst. Nat., (*ed.* 12) ii, 1767, p. 683 : Jacq. Duval, Gen. Col., ii, p. 33, t. 13, f. 63 : Lacord., Gen. Col., ii, p. 76 : Kraatz, Naturg. Ins., ii, p. 536 : Mun. Cat., p. 577 : Sharp, Trans. Ent. S. Lond., 1876, p. 150 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 371 : Leconte & Horn, Class. Col., p. 96.
Abemus, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) viii, 1876, p. 242.
Bemasus, Muls & Rey, *l.c.*, p. 259.
Dinothenarus, Gozis, Récherche, 1886, p. 14.
Platydracus, Thomson, Skand. Col., i, 1859 p. 23.
Ouchemus, Gozis, Récherche, 1886, p. 14.

asemus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 77.
Hab. N. India.

brachypterus, Kraatz, *l. c.*, p. 76.
Hab. N. India.

decipiens, Kraatz, *l. c.*, p. 75.
Hab. Ceylon.

Goryi, Lap. de Casteln., Etud. Ent., i, 1834, p. 113, t. 3, f. 2 : Erichson, Gen. Staph., p. 395 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 72.
auripennis, Kraatz, *l. c.*, *supra*, p. 72.
Hab. India.

griseipennis, Fairmaire, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. 10.
Hab. Tibet, Moupin.

indicus, Kraatz, *l. c.*, p. 75.
Hab. N. India.

luzonicus, Fauvel, Rev. d'Ent., v, 1886, p. 149.
Hab. Manilla.

maculipennis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 77.
Hab. N. India.

semipurpureus, Kraatz, *l. c.*, p. 73.
Hab. N. India.

subirideus, Kraatz, *l. c.*, p. 78.
Hab. India.

xanthocephalus, Kraatz, *l. c.*, p. 74.
Hab. India.

Genus **OCYPUS**.

Stephens, Ill. Brit. Ent., v, 1832, p. 211 : Lacord., Gen. Col., ii, p. 79 : Jacq. Duval, Gen. Col., ii, p. 33, 35, t. 14, f. 66 : Mun. Cat., p. 580 : Leconte & Horn, Class Col., p. 96.
Anodus, Nordmann, Symb., 1835, p. 11.
Goërius, Stephens, Ill. Brit. Ent., v, 1832, p. 208.
Pseudocypus, Muls. & Rey, Ann. Soc. Agric. Lyon., (4s.) viii, 1876, p. 291.
Tasgius, Stephens, Ill. Brit. Ent., v, 1832, p. 435 : Jacq. Duval, Gen. Col., ii, p. 35, t. 13, f. 65.

congruus, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 205.
Hab. Ceylon.

lineatus, Walker, *l. c.*, iii, 1859, p. 51.
Hab. Ceylon.

longipennis, Walker, *l. c.*, ii, 1858, p. 205.
Hab. Ceylon.

punctilinea, Walker, *l. c.*, ii, 1858, p. 205.
Hab. Ceylon.

testaceipes, Fauvel, Ann. Soc. Ent. Belg., xxxi, 1887, p. 97.
Hab. Yunnan.

Genus **PHILONTHUS**.

Curtis, Brit. Ent., xiii, 1825, t. 610 : Erichson, Gen. Staph., p. 426 : Lacord., Gen. Col., ii, p. 80 : Jacq. Duval, Gen. Col., ii, p. 35, t. 14, f. 67 : Mun. Cat., p. 584 :

Fauvel, Ann. Mus. Civ. Gen., xii, p. 257: Horn, Syn. Philonth. N. Amer., Trans. Amer. Ent. S., xi, 1884, p. 177: Sharp, Trans. Ent. S. Lond., 1876, p. 164; *id.*, Biol. Centr. Amer., Col., i (2), p. 395, 428: Leconte & Horn, Class, Col., p. 96.

Bisnius, Stephens, Ill. Brit. Ent., v. 1832, p. 247.
Gabrius, Stephens, *l. c.*, p. 249.
Gefyrobius, Thomson, Skand. Col., i, 1859, p. 24; ii, p. 166.
Pseudidus, pt., Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) viii, 1876, p. 574.
Rabigus, Muls. & Rey, *l. c.*, p. 523.
Remus, Holme, Trans. Ent. S. Lond., ii, 1837, p. 64.

acroleucus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 91.
Hab. India.

acuminatus, Kraatz, *l. c.*, p. 93.
Hab. India.

aeneipennis, Boheman, Freg. Eug. Resa, Col., 1858, p. 30.
Hab. China.

aeneus, Rossi, Faun. Etrusc., i, 1790, p. 249: Erichson, Gen. Staph., p. 928: Kraatz, Naturg. Ins. Deutschl., p. 578: Schiödte, Nat. Tidsskr., 1864, t. 12, f. 1: Fauvel, Faun. Gall. Rhén., iii, p. 442.

cyanicornis, Mannerheim, Brachél., 1830, p. 27. Sweden.
laticeps, Zetterstedt, Faun. Lapp., i, 1840, p. 73. Lapland.
mandibularis, Kirby, Fauna Bor. Amer., iv, 1837, p. 91. N. America.
metallicus, Boisd. & Lacord., Faun. Ent. Paris., i, 1835, p. 390. France.
politus, Linn., Syst. Nat. i (2), p. 683: Kirby, *l. c. supra*, p. 91. Sweden.
puncticollis, Stephens, Ill. Brit. Ent., v, 1832, p. 439. Britain.
similis, Marsham, Ent. Brit., 1802, p. 497. Britain.

var. *atratus*, Boisd. & Lacordaire, *l. c. supra*, p. 392 France.
Hab. N. America, Europe, N. India.

amabilis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 97.
Hab. India.

asemus, Kraatz, *l. c.*, p. 86.
Hab. N. India.

basalis, Motschulsky, Bull. Mosc., xxi (2), 1858, p. 664.
Hab. India, Ceylon, Japan.

castaneus, Gemm. & Har., Mun. Cat., 1868, p. 586.
badius (Gabrius), Motsch. (*nec* Kiesenw.), Bull. Mosc., xxxi (2), 1858, p. 661.
Hab. India.

cinctipennis, Fauvel, Faun. Gall. Rhén., iii, Cat. xxx; Bull. Soc. Norm., ii, 1878, p. 123.
Hab. Egypt, Annam, Cochinchina, Philippines.

cinctulus, Gravenhorst, Micr. Bruns, 1802, p. 167; *id.*, Mon. Col. Micr., p. 89: Erichson, Gen. Staph., p. 332.
Hab. Bengal.

concolor, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 80.
Hab. Ceylon.

cyanelytrius, Kraatz, *l. c.*, p. 80.
Hab. N. India [*Ind. Mus.*, Murree].

delicatulus, Boheman, Freg. Eug. Resa, Col., 1858, p. 29.
Hab. China.

distinctus, Gemm. & Har., Mun. Cat., 1868, p. 587.
antennatus, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 664 (*nec* Guérin).
Hab. India.

ebeninus, Gravenhorst, Micr. Brunsv., 1802, p. 170: Erichson, Gen. Staph., p. 461: Kraatz, Naturg. Ins. Deutschl., ii, p. 596.
varians, Erichson, Käfer Mark Brand., i, 1837, p. 461. Germany.
var. *brevicornis*, Gravenhorst, *l. c. supra*, p. 22. Europe.
„ *concinnus*, Gravenhorst, *ib.*, p. 21. Russia.
„ *corruscus*, Gravenhorst, *ib.*, p. 33: Erichson, Gen. Staph., p. 465. France.
„ *irregularis*, Mannerheim, Brachél., 1830, p. 30. Siberia.
„ *marcidus*, Wollaston, Cat. Col. Canar., 1854, p. 571. Canaries.
„ *nitidus*, Marsham, Ent. Brit., 1802, p. 511. Britain.
„ *ochropus*, Gravenhorst, *l. c. supra*, p. 39. Sweden.
„ *planus*, Boisd. & Lacord., Faun. Ent. Paris, i, 1835, p. 401. France.
„ *varians*, Gravenhorst, Mon. Col. Micr., 1806, p. 82. Germany.
Hab. Europe, India [*Ind. Mus.*, Kulu].

erythropus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 88: Fauvel, Ann. Mus. Civ. Gen., xv, p. 104.
Hab. India, Ceylon, Annam, China, Philippines, Sumatra, Java, Celebes, New Guinea.

erythrostictus, Kraatz, *l. c.* p. 94.
Hab. India.

flavipes, Kraatz, *l. c.* p. 88.
Hab. Ceylon, Siam.

flavocinctus, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 663.
Hab. India.

fulvitarsis, Motschulsky, Etud. Ent., viii, 1859, p. 80.
Hab. Ceylon.

fuscatus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 95.
Hab. Ceylon, Siam.

fuscolaterus (*Gabrius*), Motschulsky, Etud. Ent., viii, 1859, p. 76.
Hab. Ceylon.

gemellus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 91.
Hab. Ceylon.

geminus, Kraatz, *l. c.*, p 87.
Hab. Ceylon, China.

idiocerus, Kraatz, *l. c.*, p. 85.
Hab. Ceylon, Celebes.

lativentris, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 663.
Hab. India.

leucopygus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 90.
Hab. India.

leucotus, Erichson, Gen. Staph., 1839, p. 507 : Kraatz, *l. c.*, *supra* p. 98.
Hab. India.

longiceps, Fauvel, Ann. Mus. Civ. Gen., xv, 1879-80, p. 104.
Hab. Malacca, Borneo, Celebes, New Guinea.

longicornis, Stephens, Ill. Brit. Ent., v, 1832, p. 237 : Fauvel, Faun. Gall. Rhén., iii, p. 480 : Sharp, Biol. Centr. Amer., Col., i (2), p. 416.
algiricus, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 663. Algiers.
fumosus, Solsky, Hor. Soc. Ent. Ross., v, 1867, p. 134. Russia.
? fuscicornis, Nordmann, Symb. Mon. Staph., 1836, p. 96. Russia.
scybalarius, Nordmann, *l. c.*, p. 94 : Kraatz, Naturg. Ins. ii, p. 601 ; *id.*, Wiegm. Arch., xxv (i), p. 86. Germany, Ceylon.
varians, var. *b.*, Erichson, Käfer Mark Brand., i, 1837, p. 466 ; *id.*, Gen. Staph., p. 470 : Fauvel, Ann. Soc. Ent. Fr., (3s.) iii, 1863, p. 435. Britain.
Hab. Europe, S. America, Cape, Ceylon, Japan, Australia, Tahiti.

longulus *(Gabrius)*, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 662.
Hab. India.

luzonicus, Fauvel, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 180 ; *id.*, Rev. d'Ent., v, p. 149.
Hab. Philippines.

micantiventris, Sharp,
Hab. China.

mutans, Sharp, Trans. Ent. S. Lond., 1874, p. 43.
Hab. Japan, China.

nitens, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 82.
Hab. Ceylon.

notabilis, Kraatz, *l. c.*, p. 79.
Hab. N. India, Ceylon, Annam, Philippines.

paederoides *(Gabrius)*, Motschulsky., Bull. Mosc., xxxi (2), 1858, p. 662.
bellus, Kraatz, *l. c. supra*, p. 83.
Hab. India, Ceylon, Siam, Cochinchina, Philippines.

***pamirensis**, Sharp, Jl. As. Soc. Ben., xlvii (2), 1878, p. 170.
Hab. Pamir. [*Ind. Mus.*, type].

parviceps, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 86.
Hab. Ceylon,

pedestris, Walker, Ann. Mag. N. H., (3s.) iii, 1859, p. 51.
eustilbus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 98.
Hab. Ceylon.

peliomerus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 82.
Hab. Ceylon.

productus, Kraatz, *l. c.*, p. 89.
Hab. Ceylon.

proximus, Kraatz, *l. c.*, p. 80 : Fauvel, Faun. Gall. Rhén., iii, p. 406.
carbonarius, Erichson, Käfer Mark Brand., i, 1837, p. 448 (*nec* Gyl.).
succicola (Baryodma), Thomson, Skand., Col., ii, 1859, p. 157 : Kraatz, Deutsche Ent. Zeits., 1875, p. 129.
Hab. Europe, Siberia, N. India.

pulchellus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 92.
Hab. India, Ceylon.

quisquiliarius, Gyllenhal, Ins. Suec., ii, 1810, p. 335 : Kraatz, Naturg. Ins., p. 607 : Fauvel Faun. Gall. Rhén., iii, p. 463.
chalceipennis, Fauvel, Ann. Mus. Civ. Gen., xiii, 1878, p. 547.
dimidiatus, Lacord., Faun. Ent. Paris., i, 1835, p. 402. France.
phaeopus, Stephens, Man. Brit. Col., 1839, p. 397. Britain.
quadricollis, Horn, Trans. Amer. Ent. Soc., xi, 1884, p. 194.
var. *inquinatus*, Stephens, Ill. Brit. Ent., v, 1832, p. 223. Sweden.
„ *rubidus*, Erichson, Gen. Staph., 1840, p. 475. Germany, Japan.
„ *variipennis*, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 85. Ceylon, India.
Hab. N. America, Europe, India, Ceylon, Annam, Cochinchina, Sumatra, Java, Celebes, Philippines, Japan, Africa, New Caledonia.

***rotundicollis**, Ménétriés, Cat. Raison., 1832, p. 145 : Hochhuth, Bull. Mosc., xx (i) 1849, p. 135.
scutatus, Erichson, Gen. Staph., 1840, p. 438 : Kraatz, Naturg. Ins. Deutschl., ii, p. 580.
Hab. S. Europe, Caucasus [*Ind. Mus.*, Pamir].

rubricollis, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 665.
Hab. India.

rufomarginatus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 90.
Hab. Ceylon.

sericeicollis, Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 266.
Hab. Borneo, New Guinea.

solidus, Sharp, Trans. Ent. S. Lond., 1874, p. 43.
Hab. Japan, China.

***Stoliczkae**, Sharp, Jl. As. Soc. Beng., xlvii (2), 1878, p. 170.
Hab. Yarkand [*Ind. Mus.*, type.]

subirideus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 81.
Hab. Ceylon.

tardus, Kraatz, *l. c.*, p. 84.
Hab. Ceylon, Java.

thermarum, Aubé, Ann. Soc. Ent. Fr. (2s.) viii, 1850, p. 316 : Kraatz, Naturg. Ins. Deutschl., p. 608 : Fauvel, Faun. Gall. Rhén., iii, p. 470 ; *id.*, Ann. Mus. Civ. Gen., xii, p. 268 : Sharp, Ann. Mag. N. H., iii, 1889, p. 39.
angustatus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 92.

exilis, Kraatz, Stettin Ent. Zeit., 1851, p. 293.
maritimus, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 661.
pygmaeus, Kraatz, *l. c. supra*, p. 93.
Hab. Europe, Egypt, Japan, N. China, India, Ceylon, Java, New Guinea.

turbidus, Erichson, Gen. Staph., 1840, p. 484.
punctipennis, Wollaston, Cat. Col. Mader., 1857, p. 192.
Hab. Assam, Mauritius, Bourbon, Madagascar, Syria, Egypt, Madeira.

xanthomerus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 83.
Hab. India.

Genus **CAFIUS.**

Stephens, Ill. Brit. Ent., v, 1832, p. 245 : Fauvel, Faun. Gall. Rhen., iii, p. 421, t. 5, f. 13 ; *id.*, Ann. Mus. Civ. Gen., xii, 1878, p. 251.
Orthidus, Muls. & Rey, Ann. Soc. Agric. Lyon, (4s.) viii, 1876, p. 339.
Pseudidus, pt., Muls. & Rey, Ann. Soc. Agric Lyon, (4s.) viii, 1876, p. 574.

parallelus (*Philonthus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 99.
Hab. Ceylon.

puncticollis (*Philonthus*), Boheman, Freg. Eug. Resa, 1858, p. 31.
Hab. China.

rufescens, Sharp, Ann. Mag. N. H., (6s.) ii, 1888, p. 44.
Hab. Japan, Hongkong.

Genus **ACTOBIUS.**

Fauvel, Faune Gall. Rhén., iii, Suppt. p. 72 : Sharp, Biol. Centr. Amer., Col., i (2), p. 457.
Bisnius, Thomson, Skand. Col., ii, p. 168. (*nec* Leach, Stephens).
Erichsonius, Fauvel, *l. c. supra*, p. 427 (*nom. praeoc.*).

longulus (*Philonthus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 99 (*nec* Motsch.).
praelongus, Gemm. & Har., Mun. Cat., p. 591.
Hab. India, Ceylon, Annam, Sumatra, Celebes, Philippines.

Genus **LEUCITUS.**

Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 253.

stenoides, Gravenhorst, Mon. Col. Micr., 1806, p. 90 : Erichson, Gen. Staph., p. 493 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 94 note : Fauvel, Ann. Mus. Civ. Gen., xii, p. 253, note.
Hab. Java.

Genus **PACHYCORYNUS.**

Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 204 : Mun. Cat., p. 595 : Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 239.
Holisomorphus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 100, t. 2, f. 6.

dimidiatus, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 205, t. 1, f. *n*.
ceylanensis (*Holisomorphus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 101, t. 2, f. 6 *a-c*.
Hab. India, Ceylon, Java, Aru Islands.

Genus **BELONUCHUS.**

Nordmann, Symb. Mon. Staph., 1837, p. 129, t. 2, f. 2 : Erichson, Gen. Staph., p. 419 : Lacord., Gen. Col., ii, p. 80 : Mun. Cat., p. 595 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 269 : Sharp, Trans. Ent. S. Lond., 1876, p. 156 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 428, 429 : Leconte & Horn, Class. Col., p. 96.

castaneipennis (*Philonthus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 96.
Hab. India, Ceylon.

ferrugatus (*Philonthus*), Erichson, Gen. Staph., 1840, p. 931 : Kraatz, *l. c. supra* p. 96.
Hab. Java, Penang.

grandiceps (*Philonthus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 95.
Hab. Ceylon.

mutator, Fauvel, Ann. Mus. Civ. Gen., xv, 1879, p. 106.
Hab. Malacca, Gilolo, Celebes.

quadratus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 96.
Hab. N. India.

Genus **TRAPEZIDERUS.**

Motschulsky, Etud. Ent., viii, 1859, p. 77 : Mun. Cat., p. 599.

bicolor, Motschulsky, Etud. Ent., viii, 1859, p. 79.
Hab. Ceylon.

Genus **XANTHOLINUS.**

Serville, Enc. Méth., x, 1825, p. 475 : Erichson, Gen. Staph., p. 306 : Lacord., Gen. Col., ii, p. 68 : Jacq. Duval, Gen. Col., ii, p. 32, t. 12, f. 58 : Mun. Cat., p. 600 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 243 : Sharp, Trans. Ent. S. Lond., 1876, p. 198 ; *id.*, Biol. Centr. Amer., Col., i (2), p 475 : Leconte & Horn, Class. Col., p. 96.
Eulissus, Mannerheim, Brachél., 1830, p. 35 : Mun. Cat., p. 600.
Gyrohypnus, Stephens, Ill. Brit. Ent., v, 1832, p, 258.
Megalinus, Muls. & Rey, Mém. Acad. Lyon, xxii, 1876, p. 261.

anachoreta, Erichson, Gen. Staph., 1840, p. 316 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 102.
morio, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 207.
Hab, N. India, Ceylon.

cicatricosa, Fauvel, Notes Leyden Mus., iii, 1881, p. 163.
Hab. Sumatra.

cinctus, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 205.
Hab. Ceylon.

dispilus, Erichson, Gen. Staph., 1840, p. 317 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 104.
Hab. Bengal.

fulgidus (*Staphylinus*), Fabr., Mant. Ins., i, 1787, p. 220 ; Ent. Syst., i (2), p. 525 ; Syst. Eleuth., ii, p. 596 : Olivier, Ent., iii (42), t. 4, f. 34 : Kraatz, Naturg. Ins.

Deutschl., p. 642; *id.*, Wiegm. Arch., xxv (i), p. 105: Jacq. Duval, Gen. Col. Eur., ii, p. 32, t. 12, f. 57.
angulatus, Küster, Käfer Europ., p. 13.
pyropterus, Gravenhorst, Mon. Col. Micr., 1806, p. 102.
var. *intermedius*, Küster, *l. c. supra*, p. 13.
Hab. Europe, Ceylon.

hongkongensis, Redtenbacher, Reise Novara, Col., 1868, p. 28.
Hab. Hongkong.

inclinans, Walker, Ann. Mag. N. H., (3s.) ii, 1859, p. 51.
Hab. Ceylon.

laticeps, Erichson, Gen. Staphyl., 1840, p. 308: Kraatz, Wiegm. Arch., xxv (i), 1859, p. 102.
Hab. Java.

nigerrimus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 103.
Hab. India, Penang, Java, Hongkong.

punctulatus (*Staphylinus*), Paykull, Mon. Staph., 1789, p. 30: Kraatz, Naturg. Ins. Deutschl., ii, p. 635; *id.*, Wiegm. Arch., xxv (i), p. 104: Bouché, Nat. Ins., i, p. 181, t. 8, f. 9-13.
ater, Stephens, Ill. Brit. Ent., v, 1832, p. 255. Britain.
elongatus, Fourcroy, Ent. Paris, i, 1785, p. 171. France.
———, var. 5, Gravenhorst, Micr. Bruns., 1802, p. 45. Russia.
fracticornis, Müller, Zool. Prodr., 1776, p. 99. Sweden.
obscurus, Stephens, Ill. Brit. Ent., v, 1832, p. 256. Britain.
Hab. Europe, India.

Genus **MITOMORPHUS**.

Kraatz, Wiegm. Arch., xxv (i), 1859, p. 105: Mun. Cat., p. 604.

indicus, Kraatz, *l. c.*, p. 107, t. 2, f. 5 *a-b*.
Hab. India.

nigroaeneus, Kraatz, *l. c.*, p. 106.
Hab. Ceylon.

Genus **LEPTACINUS**.

Erichson, Käfer Mark Brand., i, 1837, p. 429; *id.*, Gen. Staph., p. 333: Boisd. & Lacord., Faun. Ent. Paris., i, p. 416: Lacord., Gen. Col., ii, p. 69: Mun. Cat., p. 605: Kraatz, Naturg. Ins. ii, p. 645; *id.*, Wiegm. Arch., xxv (i), p. 109: Jacq. Duval, Gen. Col., ii, p. 32, t. 12, f. 59: Fauvel, Faun. Gall. Rhén., iii, p. 574; *id.*, Ann. Mus. Civ. Gen., xii, p 242: Sharp, Trans. Ent. S. Lond, 1876, p. 203; *id.*, Biol. Centr. Amer., Col., i (2), p. 439: Leconte & Horn, Class. Col., p. 97.

filum, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 111.
Hab. Ceylon.

flavipennis, Kraatz, *l. c.*, p. 111.
Hab. Ceylon.

pallidipennis, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 206.
tricolor, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 110.
Hab. India, Ceylon.

pusillimus, Kraatz, *l. c.*, p. 112.
Hab. Ceylon.

trigonocephalus, Kraatz, *l. c.*, p. 109, t. 2, f. 4 *a-b*.
Hab. Ceylon.

Genus SPIROSOMA.

Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 206 : Mun. Cat., p. 606.

fulvescens, Motschulsky, *l.c.*, p. 207, t. 1, f. *o*.
Hab. India.

Genus METAPONCUS.

Kraatz, Naturg. Ins. Deutschl., ii, 1857, p. 651 : Mun. Cat., p. 606 : Fauvel, Faun. Gall. Rhén., iii, p. 379 : Sharp, Trans. Ent. S. Lond., 1876, p. 205 : *id.*, Biol. Centr. Amer., Col., i (2), p. 503 : Leconte & Horn, Class. Col., p. 97.
Cylindrocephalus, Motschulsky, Etud. Ent., viii., 1859, p. 128.
Zetestomus, Jacq. Duval, Gen. Col. Eur., ii, 1857, p. 25.

exiguus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 108.
Hab. India.

leucocnemis, Kraatz, *l.c.*, p. 107.
Hab. Ceylon.

Genus XANTHOPHYUS.

Motschulsky, Etud. Ent., viii, 1859, p. 75 : Mun. Cat., p. 607.

serpentarius, Motschulsky, *l.c. supra*, p. 76.
Hab. Ceylon.

Genus DIOCHUS.

Erichson, Gen. Staphyl., 1840, p. 300 : Lacord., Gen. Col. ii, p. 65 : Mun. Cat., p. 608 : Fauvel, Faun. Gall. Rhén., p. 366 : Sharp., Trans. Ent. S. Lond., 1876, p. 184 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 466 : Leconte & Horn, Class. Col., p. 97.
Rhegmatocerus, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 657.

antennatus (*Rhegmatocerus*), Motschulsky, Bull. Mosc., *l.c.*, p. 659.
indicus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 113.
Hab. India.

conicollis (*Rhegmatocerus*), Motschulsky, Bull. Mosc., *l.c.*, p. 658, t. 1, f. *k*.
major, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 113.
Hab. India.

punctipennis (*Rhegmatocerus*), Motschulsky, Bull. Mosc., *l.c.*, p. 659.
Hab. India.

Genus **PLATYPROSOPUS.**

Mannerheim, Brachél., 1830, p. 35 : Lacord., Gen. Col., ii, p. 63 : Mun. Cat., p. 608 : Sharp, Trans. Ent. S. Lond., 1876, p. 101 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 783.

elatus, Fauvel, *in litt.*

indicus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 114 (*nec* Motsch).
Hab. N. India, Sáhibganj.

fuliginosus, Erichson, Gen. Staph., 1840, p. 923 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 115.

orientalis, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 212.
Hab. Bengal.

fulvicollis, Motschulsky, *l.c.*, p. 212.

linearis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 115.
Hab. India.

indicus, Motschulsky, Bull. Mosc., xxxi (3), 1858, p. 212.
Hab. N. India.

laevicollis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 114.
Hab. N. India.

tamulus, Erichson, Gen. Staphyl., 1840, p. 923 : Kraatz, *l.c.*, p. 115.
Hab. Bengal [*Ind. Mus.*—?]

PAEDERINI :—(*Pédérides*) Lacord., Gen. Col., ii, 1854, p. 88 : Jacq. Duval, Gen. Col. Eur., ii, p. 41 ; Fauvel, Ann. Mus. Civ. Gen., xii, p. 224 : Mun. Cat., p. 608 : Leconte & Horn, Class. Col., 1883, p. 97.

Pinophilides, Lacord., *l.c. supra*, p. 97 : Jacq. Duval, *l.c. supra*, p. 49.

Genus **LATHROBIUM.**

Gravenhorst, Mon. Col. Micr., 1806, p. 130 : Mannerheim, Brachél., p. 37 : Erichson, Gen. Staphyl., p. 588 : Lacord., Gen. Col., ii, p. 93 : Jacq. Duval, Gen. Col. Eur., ii, p. 44, t. 17, 83 : Mun. Cat., p. 609 : Fauvel, Faune Gall. Rhénan., iii, p. 338 : Eppelsheim, Deutsche Ent. Zeits., xxiii, 1879, p. 182 : Kraatz, *ib.*, p. 193 : Sharp, Trans. Ent. S. Lond., 1876, p. 229 ; *id.* Biol. Centr. Amer., Col., i (2), p. 536 : Leconte & Horn, Class. Col., p. 99.

Bathrolium, Gozis, Rècherche, 1886, p. 14.
Glyptomerus, pt, Müller, Stettin. Ent. Zeit., 1856, p. 308 : Fauvel, Rev. d'Ent, iv, p. 28.
Lobrathium, Muls. & Rey, Ann. Soc. Linn. Lyon, xxiv, 1879, p. 29.
Notobium, Solsky, Bull. Mosc., xxxvii (2), 1864, p. 447.
Throbalium, Muls. & Rey. *l.c. supra*, p. 99.
Typhlobium, Kraatz, Verh. Zool. bot. Ges. Wien, 1856, p. 625.

chinense, Boheman, Freg. Eug. Resa., Col., 1858, p. 32.
Hab. China.

gracilentum, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 115.
Hab. Ceylon.

prolatum, Fauvel, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 180 ; *id.*, Rev. d'Ent., v. 1886, p. 148.
Hab. Philippines.

pulchellum, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 116.
Hab. Ceylon.

seminigrum, Kraatz, *l.c.*, p. 117.
Hab. Ceylon.

sublaeve, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 647.
Hab. India.

unicolor, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 117.
pallens, Gemminger & Harold, Mun. Cat., 1868, p. 611.
testaceum, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 646 (*nec* Kraatz).
Hab. Western India, Annam, Philippines.

Genus **SCIMBALIUM**.

Erichson, Gen. Staph., 1840, p. 579 : Lacord., Gen. Col., ii, p. 92 : Jacq. Duval, Gen. Col., ii, p. 43, t. 17, f. 81 : Mun. Cat., p. 613 : Fauvel, Faun. Gall. Rhén., iii, p. 359.
Lathrobomorphus, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 645.
Lathrobismorphus, Gemm & Har., Mun. Cat., p. 1868, 612.

badius (*Lathrobomorphus*), Motschulsky, *l.c. supra*, p. 646, t. 1. f. *b*.
Hab India.

Genus **ACHENIUM**.

Curtis, Brit. Ent., iii, 1825, t. 315 : Stephens, Brit. Ent., v, p. 265 : Lacord., Gen. Col., ii, p. 92 : Jacq. Duval, Gen. Col., ii, p. 44, t. 17, f. 82 : Mun. Cat., p. 612.

humerale, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 648.
Hab. India.

Genus **CRYPTOPORUS**.

Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 654 : Mun. Cat., p. 613.

flavipes, Motschulsky, *l.c.*, p. 655, t. 1, f. *j*.
Hab. India.

Genus **DOLICAON**.

Lap. de Casteln., Etud. Ent., i, 1835, p. 119 : Lacord., Gen. Col., ii, p. 91 : Jacq. Duval, Gen. Col. Eur., ii, p. 42, t. 16, f. 80 : Mun. Cat., p. 613 : Sharp, Trans. Ent. S. Lond., 1876, p. 247.
Adelobium, Nordmann, Symb. Mon. Staph., 1836, p. 139.
Pinobius, MacLeay, Trans. Ent. Soc. N. S. Wales, ii, 1870, p. 147.

indicus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 118.
Hab. India.

robustus, Kraatz, *l.c.*, p. 117.
Hab. India, Tranquebar.

sparsiventris, Fauvel, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 179 ; *id.*, Rev. d'Ent., v, 1886, p. 148.
Hab. Java, Philippines.

vicinus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 118.
Hab. India.

Genus **CRYTOBIUM.**

Mannerheim, Brachél., 1830, p. 38 : Erichson, Gen. Staph., p. 561 : Gravenhorst, Mon. Micr., p. 129 : Lacord., Gen. Col., ii, p. 89 : Jacq. Duval, Gen. Col., ii : p. 42, t. 16, f. 79 : Mun. Cat., p. 615 : Fauvel, Faun, Gall. Rhèn. iii, p. 364 : Sharp, Trans. Ent. S. Lond., 1876, p. 211 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 506 : Leconte & Horn, Class. Col., p. 98.
Glyptomerus, pt, Müller, Stettin. Ent. Zeit., 1856, p. 308.
Homaeotarsus, Hochhuth, Bull. Mosc., xxiv (i), 1851, p. 34.
Ochthephilum, Stephens, Syst. Cat. Brit. Ins., p. 287.

ceylanense, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 119.
Hab. Ceylon.

filum, Kraatz, *l. c.*, p. 119.
Hab. Ceylon.

fossigerum, Kraatz, *l. c.*, p. 120.
var. { *abdominale*, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 651.
{ *pygiale*, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 121.
" { *rufipenne*, Motschulsky, Bull. Mosc., *l.c. supra*, p. 651.
{ *indicum*, Kraatz, *l.c. supra*, p. 121.
Hab. India, Ceylon, Assam, Philippines, Java, Sumatra, Celebes.

limbatum, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 121.
Hab. India.

marginatum, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 652.
Hab. India.

sanguinolentum, Motschulsky, *l.c.*, p. 650.
Hab. India.

spectabile, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 118.
Hab. N. India.

suturale, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 652.
Hab. India.

testaceum, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 120.
Hab. N. India.

Genus **CEPHALOCHETUS.**

Kraatz, Wiegm. Arch., xxv (i), 1859, p. 122.
Cepholochaetus, Mun. Cat., p. 616.

elegans, Kraatz, *l. c.*, *supra* p. 123, t. 2, f. 7 *a-d*.
Hab. Ceylon.

indicus, Kraatz, *l.c.*, p. 124.
Hab. India, Ceylon.

Genus **PSILOTRACHELUS**.

Kraatz, Wiegm. Arch., xxv (i), 1859, p. 124 : Mun. Cat., p. 617.

crassus, Kraatz, *l.c.*, p. 124.
Hab. Ceylon.

sculptipennis, Kraatz, *l.c.*, p. 125.
Hab. India.

Genus **CALLIDERMA**.

Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 653 : Mun. Cat., p. 617.

brunneum, Motschulsky, *l.c.*, p. 653, t. 1, f. *i*.
Hab. India.

Genus **STILICUS**.

Latreille, Règne Anim., iv, 1829, p. 436 ; Enc. Méth., x, p. 494 : Erichson, Gen. Staph., p. 629 : Lacord., Gen. Col., ii, p. 96 : Jacq. Duval, Gen. Col., ii, p. 47, t. 18, f. 87 : Mun. Cat., p. 617 : Fauvel, Faun. Gall. Rhén., iii, p. 298 : Sharp, Biol. Centr. Amer., Col., i, p. 581 : Leconte & Horn, Class. Col., p. 99.
Rugilus, Curtis, Stephens. Ill. Brit. Ent., v. 1832, p. 227.

ceylonensis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 126 : Sharp, Trans. Ent. S. Lond., 1874.
Hab. Ceylon, Japan.

luteipennis, Kraatz, *l.c.*, p. 126.
Hab. Ceylon.

pygmaeus, Kraatz, *l.c.*, p. 126.
Hab. Ceylon.

sericeus, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 640.
Hab. India.

Genus **SCOPAEUS**.

Erichson, Gen. Staph., 1840, p. 604 : Lacord., Gen. Col., ii, p. 95 : Jacq. Duval, Gen. Col., ii, p. 46, t. 18, f. 86 : Mun. Cat., p. 618 : Fauvel, Faun. Gall. Rhén., iii, p. 307 : Sharp, Trans. Ent. S. Lond. 1876, p. 248 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 540, 795 : Leconte & Horn, Class. Col., p. 99.
Leptorus, Casey, Bull. Calif. Acad. Sci., ii, 1886, p. 217, 220.
Polyodontus, Solier, Gay's Hist. Fis. Chili, iv, 1851, p. 310 ; Lacord., Gen. Col , ii, p. 95.
Scopæodera, Casey, Bull. Calif. Ac. Sci , ii, 1886, p. 220.
Scoponeus, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 641.

bicuspis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 129.
Hab. India.

decipiens, Kraatz, *l.c.*, p. 131.
Hab. Ceylon.

dilutus, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 642.
Hab. India.

fulvescens (*Scoponeus*), Motschulsky, *l.c.*, p. 642.
Hab. India.

fusculus (*Scoponeus*), Motschulsky, *l.c.*, p. 641, t. 1, f. *e*.
Hab. India.

limbatus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 130.
Hab. India, Ceylon.

micros, Kraatz, *l.c.*, p. 132.
Hab. Ceylon.

nitidulus, Motschulsky, Bull. Mosc., xxv (2), 1858, p. 643.
Hab. India.

pallidulus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 131.
Hab. Ceylon.

planiusculus, Kraatz, *l.c.*, p. 132.
Hab. India.

procerus, Kraatz, *l.c.*, p. 127.
Hab. India.

puberulus, Kraatz, *l.c.*, p. 128.
Hab. India.

punctiçeps, Kraatz, *l.c.*, p. 132.
Hab. India.

rubrotestaceus, Kraatz, *l. c.*, p. 128.
Hab. Ceylon.

semifuscus, Kraatz, *l. c.*, p. 128.
Hab. Ceylon.

subfasciatus, Kraatz, *l. c.*, p. 129.
Hab. India, Ceylon, Siam, Java, Philippines.

suturalis, Kraatz, *l. c.*, p. 130.
Hab. India, Ceylon, Sumatra, Java, Celebes, Philippines.

testaceus (*Scoponeus*), Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 642.
Hab. India.

thoracicus (*Scoponeus*), Motschulsky, *l. c.*, p. 641.
Hab. India.

velutinus, Motschulsky, *l. c.*, p. 642.
Hab. India.

Genus SCLEROCHITON.

Kraatz, Wiegm. Arch., xxv (i), 1859, p. 133 : Mun. Cat., p. 620.
Saurellus, Motschulsky, Etudes Ent., viii, 1859, p. 71.

indicus (*Echiaster*), Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 637 ; (*Saurellus*) *id.*, Etud. Ent., 1859, p. 72.
ochraceus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 134, t. 2, f. 8 *a-c*.
Hab. India.

Genus LITHOCHARIS.

Boisd. & Lacord., Faun. Ent. Paris, i, 1835, p. 431; Lacord., Gen. Col., ii, p. 94: Erichson, Gen. Staphyl., p. 610 : Jacq. Duval, Gen. Col., ii, p. 46, t. 17, f. 85 : Mun. Cat., p. 620 : Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 228 : Sharp, Trans. Ent. S. Lond., 1876, p. 254 ; *id.*, Biol. Centr. Amer., Col., i (2), 1886, p. 549 : Leconte & Horn, Class. Col., p. 99.

Achenomorphus, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 647.
Metaxygodonta, Casey, Bull. Acad. N. S. Calif., ii, 1886, p. 29, 232.

affinis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 142.
Hab. India.

breviuscula, Kraatz, *l. c.*, p. 137.
Hab. Ceylon.

cinnamoptera Kraatz, *l. c.*, p. 141.
Hab. India.

curta, Kraatz, *l. c.*, p. 136.
Hab. Ceylon, Java.

debilicornis, Wollaston, Cat. Col. Mader., 1857, p. 194 ; *id.*, Col. St. Helena, p. 34 : Fauvel, Faun. Gall. Rhén., iii, p. 322, t. 4, f. 8 ; *id.*, Ann. Mus. Civ. Gen., xiii, 1878, p. 515.
aegyptiaca, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 644. Egypt.
brevicornis, Allard, Ann. Soc. Ent. Fr., (3s.), v. 1857, p. 747, t. 14, f. 1, II.
rufulus, Lynch Arribalz , Bolet. Ac-Ci. Cordoba, vii, 1885, p. 259.
Hab. W. Indies, United States, France, Egypt, Algeria, Cape Verd, Madeira, Persia, Siam, Japan, Australia, New Caledonia.

dimidiata, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 645.
spectabilis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 135.
Hab. India, Ceylon, Borneo, Celebes, China.

erythroptera, Gemm. & Har., Mun. Cat., p. 621.
fuscipennis, Kraatz (*nec* Motsch.), Wiegm. Arch., xxv (i), 1859, p. 138.
Hab. Ceylon, Celebes.

flavescens, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 643.
Hab. India.

fuscipennis, Motschulsky, *l. c.*, p. 643.
Hab. India.

humeralis, Motschulsky, *l. c.*, p. 644.
Hab. India.

nigerrima, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 141.
Hab. Ceylon.

nigriceps, Kraatz, *l. c.*, p 139.
Hab. Ceylon.

ochracea, Gravenhorst, Col. Micr. Bruns., v., 1802, p. 59 : Boisd. & Lacord., Ent. Paris., i, p. 432 : Erichson, Gen. Staph., p. 623 : Kraatz, Naturg. Ins. Deutschl., ii, p. 716 ; *id.*, Wiegm. Arch., xxv., (i), 1859, p. 140 : Fauvel, Faun, Gall. Rhén. iii, p. 320, t. 4, f. 7 ; *id.*, Ann. Mus. Civ. Gen., xii, p. 234 : Sharp, Biol. Centr. Amer., Col., i, (2), p. 551.

brunniceps, Fairmaire, Rev. Zool., 1849, p. 290. Tahiti.
fastidiosa, Fairm. & Germ., Ann. Soc. Ent. Fr., (3s), i, 1861, p. 438. Chili.
rubricollis, Gravenhorst, Mon. Col. Micr., 1806, p. 138. Europe.
Hab. India, China, Celebes, Europe, Oceania, Centr. America.

pallida, Motschulsky, Bull. Mosc., xxxi, (2), 1858, p. 644.
Hab. India.

plana, Kraatz, Weigm. Arch., xxv (i), 1859, p. 136.
Hab. India.

rufula, Kraatz, *l. c.*, p. 140.
Hab. India.

uvida, Kraatz, *l. c.*, p. 138.
Hab. Ceylon.

vicina, Kraatz, *l. c.*, p. 137.
Hab. India.

vilis, Kraatz, *l. c.*, p. 139.
sororcula, Kraatz, *l. c.*, p. 140.
Hab. India.

Genus **ISOCHILUS.**

Sharp, Ann. Mag. N. H., (6s.) iii, 1889, p. 263.

staphylinoides (*Lithocharis*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 134 : Sharp, *l. c.*, *supra*, p. 263.
Hab. Ceylon, Japan.

Genus **THINOCHARIS.**

Kraatz, Wiegm. Arch., xxv (i), 1859, p. 142 : Mun, Cat., p. 623 : Sharp, Trans. Ent. S. Lond., 1876, p. 254 : Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 226.

carinicollis, Kraatz, *l. c.* *supra*, p. 143.
Hab. Ceylon.

pygmæa, Kraatz, *l. c.*, p. 143, t. 2, f. 9 *a-c.*
Hab. Ceylon.

Genus STILICOPSIS.

Sachse, Stettin. Ent. Zeit., 1852, p. 144 : Mun. Cat., p. 625 : Sharp, Biol. Cent. Amer., Col., i (2), p. 606 : Leconte & Horn, Class. Col., p. 99.

Acanthoglossa, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 144 : Mun. Cat., p. 623 (*nec* Motsch).

brachycera, Kraatz, Wieg. Arch., xxv (i), 1859, p. 145, t. 2, f. 10 *a-c*.
Hab. Ceylon.

hirta. Kraatz, *l. c.*, p. 144.
Hab. Ceylon.

rufa, Kraatz, *l. c.*, p. 146.
Hab. Ceylon.

testaceipennis, Kraatz, *l. c.*, p. 145.
Hab. India.

Genus STYLIDERUS.

(*Stilideros*) Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 638 : Mun. Cat., p. 623.

bicatricosus, Motschulsky, *l. c.*, p. 639, t. 1., f. *d*.
Hab. India.

Genus NEOGNATHUS.

Sharp, Trans. Ent. S. Lond., 1874, p. 69.

pulchellus (*Sunius*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 147.
Hab. India.

Genus SUNIUS.

(Leach) Stephens, Ill. Brit. Ent., v, 1832, p. 275 : Erichson, Käfer Mark Brand., i, p. 523 ; *id.*, Gen. Staph. p. 637 : Lacord., Gen. Col, ii, p. 99 : Jacq. Duval. Gen. Col., ii, p. 48, t. 18, f. 88 : Mun. Cat., p. 623 : Fauvel, Faun. Gall, Rhén., iii, p. 292 : Sharp, Trans. Ent. S. Lond., 1876 p. 289 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 596, 601 : Leconte, & Horn, Class. Col., p. 99.

Astenus, Boisd. & Lacord., Faun. Ent. Paris., i, 1835, p. 435 : Gozis, Recherche, 1886, p. 14.

Mecognathus, Wollaston, Ins. Mader., 1854, p. 595.

Sunides, Motschulsky, Bull. Mosc., xxi (2), 1858, p. 638.

biplagiatus, Motschulsky, Bull. Mosc., *l.c.*, p. 636.
Hab. India.

bicolon, Sharp, Trans. Ent. S. Lond., 1874, p. 72.
Hab. China, Japan.

bispinus, Motschulsky, Bull. Mosc., xxi (2), 1858, p. 636.
Hab. India

concolor, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 149.
Hab. India, Ceylon.

flavus, Kraatz, *l. c.*, p. 149.
Hab. India.

gracilis, Kraatz, *l. c.*, p. 147.
Hab. India.

indicus, Kraatz, *l. c.*, p. 148.
Hab. India.

maculipennis, Kraatz, *l. c.*, p. 148.
Hab. Ceylon.

major, Kraatz, *l. c.*, p. 146.
Hab. Ceylon.

oculatus, Sharp, Trans. Ent. S. Lond., 1874, p. 72.
Hab. China, Japan.

obliquus, Walker, Ann. Mag. N. H., (3 s.) iii, 1859, p. 52.
Hab. Ceylon.

trinotatus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 149.
Hab. Ceylon.

Genus **PAEDERUS.**

Fabr., pt, Syst. Ent., 1775, p. 268 ; Spec. Ins., i, p. 339 ; Mant. Ins., i, p. 223 ; Ent. Syst., i (2), p. 536 ; Syst. Eleuth., ii, p. 608 ; Gravenhorst, Fam. 3, Micr. Bruns., p. 61 : Erichson, Gen. Staph., p. 619 : Jacq. Duval, Gen. Col., ii, p. 48, t. 18, f. 90 : Lacord., Gen. Col., ii, p. 100 : Mun. Cat., p. 626 : Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 235 : Sharp, Biol. Centr. Amer., Col., i (2), p. 609 ; Trans. Ent. S. Lond., 1876, p. 289 : Leconte & Horn, Class. Col., p. 99.

Paederidus, Muls. & Rey, Ann. Soc. Linn. Lyon, xxiv, 1879, p. 245.
Paederomorphus, Gautier, Ann. Soc. Ent. Fr., (4s.) ii, 1862, p. 75.

alternans, Walker, Ann. Mag. N. H. (3s.), ii, 1858, p. 205.
Hab. Ceylon.

amplicollis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 150.
Hab. Ceylon.

chilensis, Fauvel, Bull. Soc. Linn. Norm., i, 1867, p. 120 ; Rev. d'Ent., v, p. 148.
cyanocephalus, Baer, Cat., Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 107 (*nec* Erichs.).
Hab. Sumatra, Celebes, Philippines.

conicollis, Motschulsky, Etud. Ent., viii 1859, p. 73.
Hab. Madara.

cyanocephalus, Erichson, Gen. Staphyl., 1840, p. 662 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 152.
indicus, Motschulsky, Bull. Mosc., xxxi (2), 1858, p. 634.
Hab. India, Siam, Philippines.

extraneus, Wiedemann, Zool. Mag., ii (i), 1823, p. 113 : Erichson, Gen. Staphyl., p. 661 : Kraatz, Wiegm. Arch., xxv (i), p. 152.
Hab. Bengal.

fulvicornis, Erichson, Gen. Staphyl., 1840, p. 665 : Kraatz, Wiegm. Arch., xxv (i), p. 150.
Hab. Java.

fuscipes, Curtis, Brit., Ent., iii, 1834, t. 108 : Stephens, Ill. Brit. Ent., v, p. 280 : Fauvel, Faune Gall. Rhén., iii, p. 334.
corsicus, Gautier, Ann. Soc. Ent. fr., (4s.) i, 1861, p 393.
Idae, Sharp, Trans. Ent. S. Lond., 1874, p. 75, Siam, China, Japan.
longipennis, Erichson, Käfer Mark Brand., i, 1837, p. 517: Kraatz, Naturg. Ins., p. 728.
peregrinus, Erichson, Gen. Staph., 1840, p. 656 : Blanchard, Voy. Pole Sud., Zool., iv, p. 55, t. 4, f. 10 : Kraatz, Wiegm. Arch., xxv (i), p. 151 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 236.
riparius, Gravenhorst, Micr., 1802, p. 65.
Hab. S. Europe, Caucasus, Africa, Mauritius, Madagascar, Persia, Jhelam Valley, Calcutta, S. India, Ceylon, Siam, China, Japan, Annam, Cochinchina, Sumatra, Java, Lombok, New Caledonia, Philippines [*Ind. Mus.* Jhelam Valley].

intermedius, Boheman, Freg. Eug. Resa, Col., 1858, p. 32.
Hab. Philippines, Manilla.

javanus, Lap. de Casteln., Etud. Ent., i, 1834, p. 123 : Erichson, Gen. Staphyl., 1840, p. 654 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 150.
Hab. Java.

melampus, Erichson, Gen. Staphyl., 1840, p. 660 : Kraatz, Wiegm. Arch., xxv (i), p. 153.
Hab. India.

mixtus, Sharp, Trans. Ent. S. Lond., 1874, p. 75.
Hab. China, Hongkong, Japan.

piliferus Motschulsky, Etud. Ent., viii, 1859, p. 74.
Hab. India, Tranquebar.

puberulus, Motschulsky, *l. c.*, p. 74.
Hab. Pen. Madara.

ruficoxis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 151.
Hab. Ceylon.

rugipennis, Motschulsky, Etud. Ent., viii, 1859, p. 74.
Hab. India, Nilgiris.

tamulus, Erichson, Gen. Staph., 1840, p. 661 : Kraatz, Wiegm. Arch., xxv (i), p. 153.
dubius, Kraatz, *l. c.*, p. 151.
Hab. Singapur, Ceylon.

variceps, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 152.
Hab. Ceylon.

Genus **PALAMINUS.**

Erichson., Gen. Staphyl., 1840, p. 681. Lacord., Gen. Col., ii, p. 104 : Mun. Cat., p. 629 : Leconte, Proc. Amer. Phil. Soc., xvii, p. 396 : Sharp, Trans, Ent. S. Lond., 1876, p. 340 ; Biol. Centr. Amer. Col., i (2), p. 631: Fauvel Ann. Mus. Civ. Gen., xii, 1878, p. 225 : Leconte & Horn, Class. Col., p. 99.

ceylanensis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 153.
Hab. Ceylon.

indicus, Kraatz, *l.c.*, p. 153.
Hab. India.

Genus **OEDICHIRUS**.

Erichson, Gen. Staphyl., 1840, p. 684 : Lacord., Gen. Col., ii, p. 104 : Jacq. Duval, Gen. Col., ii, p. 49, t. 19, f. 91 : Mun. Cat., p. 629 : Sharp. Trans. Ent. S. Lond., 1876, p. 338.
Elytrobaeus, Sahlberg, Acta Soc. Fenn., ii, 2, 1847.

alatus, Nietner, Journ. As. Soc. Ben., xxv, 1856, p. 393 ; *id.*, Ann. Mag. N. H., (2s) xix, 1857, p. 247 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 154.
Hab. Ceylon.

longipennis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 154.
Hab. N. India.

ruficeps, Kraatz, *l.c.*, p. 155.
Hab. India.

Genus **PROCIRRUS**.

Erichson, Gen. Staph., 1840, p. 685 : Lacord., Gen. Col., ii., p. 105 : Jacq. Duval, Gen. Col., ii, p. 50, t. 19 f. 92 : Mun. Cat., p. 630.

Lefebvrei, Latreille, Règne, Anim., iv, 1829, p. 436, note : Gurin. Ic. Ins., t. 9, f. 6 *a-d* : Erichson, Gen. Staph., p. 686 : Jacq. Duval, Gen. Staph., t. 19. f. 92.
Hab. Sicily, Java *(Fauvel)*.

fusculus, Sharp, Ann. Mag. N. H., iii, 1889, p. 324, note.
Hab. Bengal, Dacca.

Genus **PINOPHILUS**.

Grayenhorst, Col. Micr. Brunsv., 1802, p. 201 : Erichson, Gen. Staph., p. 669 : Lacord., Gen. Col., ii, p. 102 : Jacq. Duval, Gen. Col., ii, Cat., p. 73 : Mun. Cat., p. 630 : Sharp, Trans. Ent. S. Lond., 1876, p. 318 ; *id.* Biol. Centr. Amer., Col. i (2), p. 620 : Leconte & Horn, Class. Col., p. 99.
Pityophilus, Brullé, Hist. Nat. Ins. Col., iii, 1837, p. 75.

brachypterus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 161.
Hab. Ceylon.

brevis, Kraatz, *l.c.*, p. 159.
Hab. Ceylon.

complanatus, Erichson. Gen. Staphyl., 1840, p. 672 : Kraatz, *l. c. supra*, p. 155.
morio, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 517.
Hab. India.

depressus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 157.
Hab. N. India.

javanus, Erichson, Gen. Staphyl., 1840, p. 672: Kraatz, *l.c.*, *supra*, p. 156.
Hab. Java.

leucopus, Kraatz, *l.c.*, *supra*, p. 158.
Hab. India, Tranquebar.

melanocephalus, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 516: Kraatz, Wiegm. Arch., xxv (i), 1859, p. 159.
Hab. India.

melanomerus, Kraatz, *l.c.*, p. 160.
Hab. India.

pallipes, Kraatz, *l.c.*, p. 156.
Hab. Ceylon.

picticornis, Kraatz, *l.c.*, p. 158.
Hab. Ceylon.

pilicollis, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 516.
Hab. India, Tranquebar.

planus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 157.
Hab. India.

rotundicollis, Kraatz, *l.c.*, p. 160.
Hab. Ceylon.

ruficeps, Kraatz, *l.c.*, p. 155.
Hab. India [*Ind Mus.*, Sahibganj].

rufipennis, Sharp, Trans. Ent. S. Lond., 1874, p. 78.
Hab. China, Japan.

Genus **EDAPHUS**.

Leconte, Class. Col., 1861, p. 67: Leconte & Horn, Class. Col., p. 98: Mun. Cat., p. 532: Fauvel, Rev. d' Ent., i, p. 138: Horn, Bull. Brookl. Soc., vii, 1885, p. 121: Leconte & Horn, Class. Col., p. 98.

Tetratarsus, Schaufuss, Nunq. Otios., ii, 1877, p. 460: *id.*, Psel. Siamr's, p. 24.

cribricollis, Schaufuss, Hor. Ent. Ross., xxi, 1887, p. 109.
Hab. Sumatra.

dilutus, Schaufuss, *l.c.*, p. 109.
Hab. Sumatra.

plicatulus, *(Tetratarsus)*, Schaufuss, Psel. Siam's, 1877, p. 25.
Hab. Siam.

sumatrensis, Schaufuss, Hor. Ent. Ross., xxi, 1887, p. 110.
Hab. Sumatra.

STENINI:—(*Sténides*) Lacord., Gen. Col., ii, 1854, p. 106: Jacq. Duval, Gen. Col., ii, p. 50: Mun. Cat., p. 631: Fauvel, Ann. Mus. Civ. Gen., xii, p. 219: Leconte and Horn, Class. Col., 1883, p. 97.

Genus **STENAESTETHUS**.

Sharp, Trans. Ent. S. Lond., 1874, p. 69 ; *id.*, *ib.*, 1876, p. 356 ; Biol. Centr. Amer., Col., i (2), p. 640.

sunioides, Sharp, *l.c.*, p. 80.
Hab. China, Japan.

Genus **STENUS**.

Latreille, Précis caract. Ins., 1796, p. 77 : Erichson, Gen. Staph., p. 689 : Lacord., Gen. Col., ii, p. 107 : Jacq. Duval, Gen. Col., ii, p. 51, t. 19, f. 94 : Mun. Cat., p. 632 : Leprieur, Ann. Soc. Ent. Fr., (2 s) ix, 1851, p. 191 : Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 221 : Rey, Ann. Soc. Linn. Lyon, xxx, 1886, p. 183 : Casey, Bull. Calif. Acad. Scien., ii, p. 261 ; *id.*, Rev. Stenini, N. America, 1884 : Sharp, Trans. Ent. S. Lond., 1876, p. 358 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 640 : Leconte & Horn, Class. Col., p. 97.

Areus, Casey, Rev. Stenini N. America, 1884, p. 150.
Hemistenus, Motschulsky, Bull. Mosc., xxxiii (2), 1860, p. 557.

acuminatus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 165.
Hab. Ceylon.

barbatus, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 531 ; *id.*, Ann., Mag. N. H., (2s. lxix, 1857, p. 381 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 163.
Hab. Ceylon.

basicornis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 163.
Hab. Ceylon.

bispinus, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 514 : Kraatz, Wiegm. Arch., *l.c. supra*, p. 164.
Hab. India.

bivulneratus, Motschulsky, *l.c. supra*, p. 514.
Hab. India.

brachypterus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 164.
Hab. Ceylon.

cariniger, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 514 : Kraatz, Wiegm, Arch., xxv (i), p. 162.
Hab. India.

cicindela, Sharp, Trans, Ent. S. Lond., 1874, p. 85.
Hab. China, Japan.

cribellatus, Motschulsky, Bull. Mosc., *l.c. supra*, p. 515 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 164.
Hab. India.

cylindricollis, Boheman, Freg. Eug. Resa, Col., 1858, p, 34.
Hab. Malacca.

fulvescens, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 515 : Kraatz, Wiegm. Arch., xxv (i), p. 166.
Hab. India.

lacertoides, Nietner, Journ. As. Soc. Beng., xxv, 1856, p. 532 ; *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 382 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 165.
Hab. Ceylon.

pictus, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 515 : Kraatz, *l.c. supra*, p. 166.
Hab. India.

piliferus, Motschulsky, *l.c.*, p. 514 : Kraatz, *l. c. supra*, p. 163.
Hab. India.

pulcher, Motschulsky, Etud. Ent., viii, 1859, p. 71.
Hab. Ceylon.

rugicollis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 162.
Hab. India.

tenuipes, Sharp, Trans. Ent. S. Lond., 1874, p. 80.
Hab. Kiukiang on Yangtse, Japan.

tricarinatus, Kraatz, *l. c. supra*, p. 164.
Hab. India.

velocipes, Fauvel, Rev. d'Ent., v, 1886, p. 146 ; Ann. Soc. Ent. Fr., (6s.) vi, 1886. p. 179.
Hab. Philippines.

vilis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 162.
Hab. India.

Genus **MEGALOPS.**

Erichson, Gen. Staph., 1840, p. 751 : Lacord., Gen. Col., ii, p. 111 : Mun. Cat., p. 641 : Sharp, Trans. Ent. S. Lond., 1876, p, 378 ; *id.*. Biol. Centr. Amer., Col. i, (2), p. 667, 668.

acutangulus, Waterhouse, Ann. Mag. N. H., (5s.) xii, 1883, p. 336.
Hab. Java.

OXYTELINI :—*(Oxytélides)* Lacord., Gen. Col., ii, 1854, p. 109 : Jacq. Duval, Gen. Col., ii, p. 54 : Mun. Cat., p. 641 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 209 : Leconte & Horn, Class. Col., 1883, p. 101.

Genus **OSORIUS.**

Latreille, Fam. Nat., 1825, p. 245 ; *id.*, Règne Anim , iv, 1829, p. 438 : Erichson, Gen. Staph., p. 753 : Lacord., Gen. Col., ii, p. 112 : Mun. Cat., p. 642 : Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 209 : Leconte, Trans. Amer. Ent. S., vi, p. 215 : Sharp, Trans. Ent. S. Lond., 1876, p. 381 ; *id.*, Biol. Centr. Amer., Col., i (2), p, 677.
Molosoma, Say, Trans. Amer. Phil. Soc., n. s., iv, 1834, p. 462.

compactus, Walker, Ann. Mag. N. H., (3s.) iii, 1859, p. 52.
Hab. Ceylon.

cordicollis, Fauvel, Notes Leyden Mus,, iv, 1882, p. 58, note.
Hab. Sumatra.

fumator, Fauvel, Rev. d'Ent., viii, 1889, p. 246.
Hab. Sumatra, New Caledonia.

punctulatus, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 508 : Kraatz, Wiegm. Arch., xxv (i), p. 168.
Hab. India.

rufipennis, Motschulsky, *l. c.*, p. 508 : Kraatz, Wiegm. Arch., xxv (i), p. 168.
Hab. India.

rufipes, Motschulsky, *l. c.*, p. 508 : Kraatz, Wiegm. Arch., xxv (i), p. 168.
Hab. India.

rugiceps, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 166.
Hab. India.

rugicollis, Kraatz, *l. c.*, p. 167.
Hab. Ceylon.

rugifrons, Erichson, Gen. Staphyl., 1840, p. 756 : Kraatz, *l. c. supra*, p. 166.
Hab. Java.

Genus **HOLOTROCHUS**.

Erichson, Gen. Staphyl., 1840, p. 757 : Lacord., Gen. Col., ii, p. 113 : Mun. Cat.. p. 643 : Leconte, Trans. Amer. Ent. S., vi, p. 216 : Sharp, Trans. Ent. S. Lond., 1876, p. 387; *id.*, Biol. Centr. Amer., Col., i, (2), p. 682.

minusculus, Fauvel, Ann. Mus. Civ. Gen., xv, 1879-80, p. 79.
Hab. Borneo, Java, Mysol.

Genus **BLEDIUS**.

Mannerheim, Brachèl., 1830, p. 44 : Stephens, Ill. Brit. Ent., v, p. 307 : Erichson, Gen. Staph., p. 760 : Lacord., Gen. Col., ii, p. 114 : Jacq. Duval, Gen. Col., ii, p 54, t. 20, f. 100 : Mun. Cat., p. 643 : Leconte, Trans. Amer. Ent. S., vi, p. 217 : Sharp, Trans. Ent. S. Lond., 1876, p. 393; *id.*, Biol. Centr. Amer., Col., i (2), p. 685 : Leconte & Horn, Class. Col., p. 103.

Astycops, Thomson, Skand. Col., i, p. 43 ; iii, p. 121, 1859 : Schiödte, *l. c. infra*, p. 149.

Bargus, Schiödte, Nat. Tidsskr., (3s.) iv, 1866, p. 148, 316.

Hesperophilus, Stephens, Ill. Brit. Ent., v, 1832, p. 309 : Schiödte, *l. c.*, p. 150.

Tadunus, Schiödte, *l. c. supra*, p. 147, 317.

Teropalpus, pt, Solier, Gay's Hist. Fis. Chili, iv, 1851, p. 330; Lacord., Gen. Col., ii, p. 154.

bispinus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 169.
Hab. India.

brunnipennis, Fabr., Syst. Eleuth., ii, 1801, p. 596 : Erichson, Gen. Staph., p. 779 : Kraatz, *l. c. supra*, p. 168, note.

puncticollis (*Osorius*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 168.
Hab. India.

dilutipennis, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 507 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 170.
Hab. India.

gracilicornis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 169.
Hab. Ceylon.

hoplites, Fauvel, Rev. d'Ent., v, 1886, p. 146 ; Ann. Soc. Ent. Fr., (6s.) vi, 1886 p. 178.
? tricornis, Redtenbacher, Reise Novara, Col., 1868, p. 31.
Hab. Siam, Annam, Philippines, ? Shanghai.

lucidus, Sharp, Trans. Ent. S. Lond., 1874, p. 90.
Hab. China, Japan.

minusculus, Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 144.
Hab. Ceylon.

pulchellus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 169.
Hab. Ceylon.

tuberculatus, Fabr., Ent Syst., Suppl., 1798, p. 181 ; Syst. Eleuth., ii, p. 601 ? : Kraatz, *l. c. supra*, p. 168.
Hab. India, Ceylon.

Genus **PLATYSTETHUS**.

Mannerheim, Brachél., 1830, p. 46 : Lacord., Gen. Col., ii, p. 116 : Jacq. Duval., Gen. Col., ii, p. 55, t. 21, f. 101 : Mun. Cat., p. 647 : Sharp, Biol. Centr. Amer., Col., i (2), p. 686.
Platysthetus, Erichson, Gen. Staph., 1840, p. 781.
Pycnocraerus, Thomson, Skand. Col., i, 1859, p. 43 ; iii, p. 125.

crassicornis, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 506.
Hab. India.

spectabilis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 170.
Hab. India, Annam, Philippines.

testaceus, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 506.
Hab. India.

Genus **OXYTELUS**.

Gravenhorst, Col. Micr. Brunsv., 1802, p. 101 : Mannerh., Brachèl., p. 47 : Erichson, Gen. Staph., p. 785 : Jacq. Duval., Gen. Col., ii, p. 55, t. 21, f. 102, 103 : Lacord., Gen. Col., ii, p. 116 : Mun. Cat., p. 648 : Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 214 : Leconte, Trans. Amer. Ent. S., vi, 1877, p. 234 : Sharp, Biol. Centr., Amer., Col., i (2), p. 687 : Leconte & Horn, Class. Col., p. 103.
Anotylus, Thomson, Skand. Col., i, 1859, p. 44 ; iii, p. 130.
Caccoporus, Thomson, *l.c.*, i, p 43 ; iii, p. 127.
Epomotylus, Thomson, *l.c.*, i, p. 43 ; iii, p. 128.
Styloxys, Gozis, Récherche, 1886, p. 15.
Tanycraerus, Thomson, *l.c. supra*, i, p 43 ; iii, p. 129.

bengalensis, Erichson, Gen. Staph., 1840, p. 789: Kraatz, Wiegm. Arch., xxv, (i) 1859, p. 171.
Hab. Bengal.

bicolor, Walker, Ann. Mag. N. H., (3 s.) iii, 1859, p. 52.
Hab. Ceylon.

celebensis, Fauvel, Rev. d'Ent., vi, 1886, p. 145; *id.*, Ann. Soc. Ent. Fr., (6 s.) vi, 1886, p. 178.
Hab. India, Sumatra, Java, Celebes, Philippines.

exasperatus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 175.
Hab. Ceylon.

ferrugineus, Kraatz, *l.c.* p. 173.
Hab. Ceylon, India.

flavipennis, Kraatz, *l.c.*, p. 172.
? = *incisus*, Motschulsky *q. v.*
Hab. Ceylon.

incisus, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 504
Hab. India.

latiusculus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 176.
Hab. Ceylon.

lividus, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 503: Kraatz, Wiegm. Arch., xxv, (i), 1859, p. 171.
Hab. India.

micans, Kraatz, *l.c.*, p. 175.
Hab. Ceylon.

nigriceps, Kraatz, *l.c.*, p. 171.
Hab. India.

nitidulus, Gravenhorst, Micr. Brunsv., 1802, p. 107: Kraatz, Naturg. Ins. Deutschl., ii, p. 860.
angustatus, Stephens, Ill. Brit. Ent., v. 1832, p. 320. Britain.
piceus, Schrank, Enum. Ins. Austr., 1781, p. 236. Austria.
„ var., Paykull, Faun. Suec., iii, 1800, p. 384. Sweden.
ruficrus, Stephens, *l.c. supra*, p. 320. Britain.
rugulosus, Say, Trans. Amer. Phil., iv, 1834, p. 460. N. America.
Hab. N. America, Europe, India [*Ind. Mus.*, Leh].

parasitus, Motschulsky, Etud. Ent., viii, 1859, p. 69.
Hab. Ceylon.

productus, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 205.
Hab. Ceylon.

pulcher, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 173.
Hab. India.

puncticeps, Kraatz, *l.c.*, p. 176.
Hab. Ceylon.

pygmaeus, Kraatz, *l.c.*, p. 176.
pusillimus, Kraatz, *l.c.*, p. 177.
Hab. Ceylon, India.

rudis, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p 205.
Hab. Ceylon.

rufus, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 174.
Hab. Ceylon.

simplex, Motschulsky, Etud. Ent., viii, 1859, p. 70.
Hab. Ceylon.

sparsus, Fauvel, Ann. Mus. Civ. Gen., x, 1877, p. 203 ; *ib.*, xiii, 1878, p. 493.
Hab. Java, Sumatra, New Caledonia, Australia, New Zealand.

tenuis, Motschulsky, Etud. Ent., viii, 1859, p. 70.
Hab. India.

thoracicus, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 504 : Kraatz, Wiegm. Arch., xxv (i), p. 175.
Hab. India.

varipennis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 172.
Hab. Ceylon.

Genus **THINODROMUS**.

Kraatz, Naturg. Ins. Deutschl., ii, 1857, p. 866 : Mun. Cat., p. 651.
Trogophloeus, i, Erichson, Col. Mark Brand., i, p. 599.

lunatus (*Trogophloeus*), Motschulsky, Bull. Mosc., xxx (4), 1857, p. 504.
Hab. India.

Genus **XEROPHYGUS**.

Kraatz, Wiegm. Arch., xxv (i), 1859, p. 178 : Mun. Cat., p. 651.

flavipes, Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 143.
Hab Ceylon.

pallipes, (*Trogophloeus*), Motschulsky, *l.c.* (4), 1857, p. 505 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 178, t. 3, f. 1 *a-b*.
Hab. India.

Genus **TROGOPHLOEUS**.

Mannerheim, Brachél., 1830, p. 49 : Erichson, Gen. Staph., p. 801 : Lacord., Gen. Col., ii, p. 118 : Kraatz, Naturg. Ins. Deutschl., ii, p. 868 : Jacq. Duval, Gen. Col., ii, p. 56, t. 21, f. 194 : Mun. Cat., p. 652 : Leconte, Trans. Amer. Ent. S, vi. p. 247 : Sharp, Trans. Ent. S. Lond., 1876, p. 397 ; Biol. Centr. Amer, Col., i (2), p. 697 : Leconte & Horn, Class, Col., p. 103.
Amisammus, Gozis, Recherche, 1886, p. 14.
Curpalinus, Stephens, Ill. Brit. Ent., v, 1832, p. 324.
Taenosoma, Mannerheim, Brachél., 1830, p. 50.
Teropalpus, pt, Solier, Gay's Hist. Fis. Chili, iv, 1851, p. 330 : Lacord., Gen. Col. ii, p. 154.

exiguus, Erichson, Käfer, Mark Brand., i, 1837, p. 604: Kraatz, Naturg. Ins., p. 877: Fauvel, Faun. Gall. Rhén., iii, p. 157.
impressus, Boisd. & Lacordaire, Faun. Paris., i, 1835, p. 467.
Hab. Europe, Caucasus, Japan, Sumatra, Java, New Caledonia, Australia, Zanzibar, W. Africa.

foveicollis, Kraatz, Weigm. Arch., xxv (i), 1859, p. 180.
Hab. India.

indicus, Kraatz, *l.c.*, p. 179.
Hab. India, Ceylon, Annam, Java, Celebes, New Caledonia, Philippines.

minimus, Kraatz, *l.c.*, p. 180
Hab. Ceylon.

scabrosus, Kraatz, *l.c.*, p. 179.
Hab. India.

siamensis, Fauvel, Rev. d'Ent., v, 186, p. 144; *id.*, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 178.
Hab. Siam, Sumatra, Java. Philippines.

simplex, Motschiulsky, Bull. Mosc., xxx (4), 1857, p. 505: Kraatz, Wiegm. Arch., xxv, (i) 1859, p. 180: Fauvel, Ann. Mus. Civ. Gen., xiii, p. 190.
Hab. India, Ceylon, Annam, Java, Celebes, Philippines, Australia.

taprobanae, Walker, Ann. Mag. N. H., (3s.) iii. 1859, p. 52.
Hab. Ceylon.

HOMALINI:— (*Omalides*) Lacord., Gen. Col. ii, 1854, p. 132: Jacq. Duval, Gen. Col., ii, p. 66: Mun. Cat., p. 657: Leconte & Horn, Class. Col., p. 103.

Genus **ARPEDIUM.**

Erichson, Käfer, Mark Brand., i, 1837, p. 618; id., Gen. Staph., p. 858: Lacord., Gen. Col., ii, p. 139: Jacq. Duval, Gen. Col., ii, p. 72, t. 72, f. 125: Mun. Cat., p. 662: Leconte & Horn, Class. Col., p. 104.

pallens, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 493: Kraatz, Wiegm, Arch., xxv (i), p. 182.
Hab. Bombay.

Genus **EUPIESTUS.**

Kraatz, Wiegm. Arch., xxv (i), 1859, p. 182: Mun. Cat., p. 662.

sculpticollis, Kraatz, *l. c. supra*, p. 182, t. 3, f, 4 *a-b*.
Hab. Ceylon.

Genus **HOMALIUM.**

Gravenhorst (*Omalium*), Micr. Brunsv., 1802, p. 111: Erichson, Käfer Mark Brand., i, p. 628; *id.*, Gen. Staph., p. 874: Mun. Cat., p. 665: Fauvel, Faun. Gall. Rhénan., iii, p. 57: Sharp, Trans. Ent. S. Lond., 1876, p. 402; *id.*, Biol. Centr. Amer., Col., i (2), p. 744: Leconte & Horn, Class. Col., p. 104.

Acrolocha, Thomson, Skand. Col., i, 1859, p. 50 ; iii, p. 201.
Acrulia, Thomson, *l.c.*, i, p. 50 ; iii, p. 199.
Etheothassa, Thomson, *l.c.*, i, p. 51 ; iii, p. 206.
Hapalaraea, Thomson, *l.c.*, i, p. 50 ; iii, p. 200.
Hypopycna, Muls. & Rey, Ann. Soc. Linn. Lyon, xxvii, 1880, p. 274.
Omalium, Gravenhorst, *l c. supra* : Lacord., Gen. Col., ii, p. 143 : Sharp, *l.c. supra*, : Jacq. Duval, Gen Col., ii, p. 76, t. 26, f. 129.
Phloeonomus, Heer, Col. Helv., i, 1842, p, 174.
Phloeostiba, Thomson, *l.c. supra*, i, p. 51 ; iii, p. 208.
Phyllodrepa, Thomson, *l.c.*, i, p. 52 ; iii, p. 214.
Xylodromus, Heer, Col. Helv., i, 1842, p. 184.

angulatum (*Phloeonomus*), Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 142.
Hab. Ceylon.

filiforme, Walker, Ann. Mag. N. H., (3 s.), ii, 1858, p. 205.
Hab. Ceylon.

obscurum, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 181.
Hab. Ceylon.

quadrifossulatum, Motschulsky, Etud. Ent., 1859, p. 68.
Hab. Ceylon.

singulare, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 181.
Hab. Ceylon, Sumatra, Celebes, New Caledonia.

PIESTINI :—(*Piestides*) Lacord., Gen. Col., ii. 1854, p. 124 : Mun. Cat., p. 674 : Fauvel, Faun. Gall. Rhên., iii, p. 14 ; Ann. Mus. Civ. Gen., xii, p. 184 ; Leconte & Horn, Class. Col., p. 105.

Genus **ELEUSIS**.

Lap. de Casteln., Etud. Ent., i. 1834, p. 131 : Lacord., Gen. Col., ii, p. 127 : Mun. Cat., p. 675 : Fauvel, Ann. Mus. Civ. Gen., xii, p. 206 ; *id.*, Notic. Ent., vii, p. 17 ; Sharp, Trans. Ent. S. Lond., 1876, p. 410 ; *id.*, Biol. Centr. Amer., Col., i (2), p. 728 : Leconte & Horn, Class. Col., p. 106.
Chasoliom, Lap. de Casteln., Etud. Ent., 1835. p. 132.
Isomalus, pt, Erichson, Gen. Staph., 1840, p. 838 : Fauvel, Bull. Soc. Linn., Norm., ix, 1864, p. 35 ; *id.*, Notic. Ent., ii. p. 31.

fusciceps (*Isomalus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 184.
Hab. Ceylon.

indica (*Isomalus*), Kraatz, *l.c.*, p. 183 : Waterhouse, Trans. Ent. S. Lond., 1876, p. 14.
tenuis (*Prognatha*), Walker,, Ann. Mag. N. H., (3s.) iii, 1859, p. 52.
Hab. India.

Kraatzii, Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 207.
apicipennis (*Isomalus*), Kraatz, Wiegm. Arch., xxv (i), 1859, p. 183 (*nec* Fairm.)
Hab. Ceylon.

Genus **HOLOSUS.**

Motschulsky, Bull. Mosc., xxx (4), 1857, p. 496 : Mun. Cat., p 676 : Kraatz, Wiegm. Arch., xxv (i), p. 184 : Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 198.

conuriformis, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 499 : Kraatz, *l.c. supra*, p. 185.
Hab. India.

fossulatus (*Holotrochus ?*), Motschulsky, *l.c.*, p. 495 : Kraatz, *l.c.*, p. 185.
Hab. India.

foveolatus (*Holotrochus ?*), Motschulsky, *l.c.*, p. 496 : Kraatz, *l.c.*
Hab. India.

mycetoporiformis, Motschulsky, *l.c.* p. 500 : Kraatz, *l.c.*
Hab. India.

olisthaeriformis, Motschulsky, *l.c.*, p, 500 : Kraatz, *l. c.*
Hab. India.

tachiniformis, Motschulsky, *l.c.*, p. 498 : Kraatz, *l.c.*, p. 185, t. 3, f. 5 *a.b.*
Hab. India.

tachyporiformis, Motschulsky, *l. c.* p. 498 : Kraatz, *l. c.*
Hab. India.

Genus **THORACOPHORUS.**

Motschulsky, Bull. Mosc., xiii, 1840, p. 197 : Etud. Ent., 1859, p. 66 : Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 195 : Sharp. Trans. Ent. S. Lond., 1876, p. 418 ; *id.*, Biol. Centr. Amer., Col., i (2,) p. 725 : Fauvel, Rev. d'Ent., viii, 1889, p. 244.

Glyptoma, pt, Erichson, Gen. Staph., 1840, p. 908 : Lacord., Gen. Col,, ii, p. 148 : Motsch., Etud Ent., 1859, p. 67 : Sharp, Biol. Centr. Amer., Col., i (2), p. 723.

Thoraxophorus, Motschulsky, Bull. Mosc., x (5), 1837, p. 98 : t. 7, f. *a* : Mun. Cat. p. 677.

duplicatus, Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 197.
Hab. Burma, Borneo, Aru Islands.

subnitidus, Motschulsky, Etud. Ent., 1859, p. 66.
Hab. India.

Genus **LISPINUS.**

Erichson, Gen. Staphyl., 1830, p. 1828, t. 5, f. 8-*a* : Lacord., Gen. Col., ii, p. 126 : Mun. Cat., p. 677 : Fauvel, Bull. Soc. Norm., ix, 1865, p. 44 : *id.*. Not. Ent., ii, 1864, p. 40 : Ann. Mus. Civ. Gen., xii, 1878, p. 200 : Sharp, Trans., Ent. S. Lond., 1876, p. 411 ; Biol. Centr. Amer. Col., i (2), p. 718 : Leconte & Horn, Class. Col., p. 106.

brevicornis, Kraatz, Wiegm. Arch., xxv (i), 1859, p. 187.
Hab. India.

coarcticollis, Kraatz, *l.c.*, p. 186, t. 3, f. 6.
Hab. India.

curticollis, Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 204.
Hab. Java, Island Ke.

fulvus, Motschulsky, Bull. Mosc., xxx (4), 1857, p. 495.
Hab. Calcutta.

impressicollis, Motschulsky, *l.c.* p. 495 : Kraatz, Wiegm. Arch., xxv (i), 1859, p. 186.
Hab. India.

laevigatus, Kraatz, Wiegm. Arch., xxv, (i), 1859, p. 188.
Hab. Ceylon.

laevipennis, Kraatz, *l.c.*, p. 185.
Hab. Ceylon.

lineipennis, Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 202.
Hab. Java, New Guinea.

sculptus, Kraatz, *l.c. supra*, p. 188 : Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 196.
Hab. Ceylon.

strigiventris, Kraatz, *l.c. supra*, p. 186.
Hab. India.

subopacus, Kraatz, *l.c.*, p. 187 : Fauvel, Ann. Mus. Civ. Gen., xii, 1878, p. 203.
Hab. Ceylon, Aru Islands, Sumatra, New Guinea.

tenuicornis, Kraatz, *l.c.*, p. 187.
Hab. Ceylon.

testaceus, Kraatz, *l.c.*, p. 188.
Hab. Ceylon.

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